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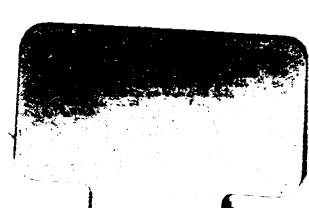
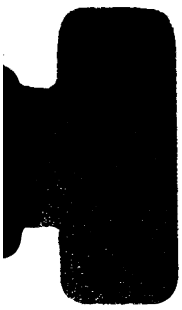
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PRESIDENT STEWART.



SECRETARY REPP.

PROCEEDINGS

OF THE

American Veterinary Medical Association.

SESSION OF 1903.

Edited by M. H. Reynolds, Chairman of Publication Committee,
St. Anthony Park, Minn.

ST. PAUL, MINN.:
THE PIONEER PRESS COMPANY.
1903.

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HONORARY MEMBERS.

- Adami, Dr. J. George.
Arloing, Dr., Director Lyons Veterinary School, Lyons, France.
Bang, Prof. Dr., Royal Veterinary College, Copenhagen, Denmark.
Biggs, Prof. H. M., Bellevue Medical College, New York, N. Y.
*Burnham, Walter L., Lowell, Mass.
Chauveau, Prof. A., Director-General of Veterinary Schools of France,
Lyons, France.
*Dieckerhoff, Prof. W., Rektor der Thierartzlichen Hochschule, Berlin,
Germany.
*Fleming, George, F. R. C. V. S., Higher Leigh, Combe Martin, North
Devon, England.
Johne, Herr Prof. Dr. J., Thierartzlichen Hochschule, Dresden, Ger
many.
Kitt, Prof. Dr. Theodore, Veterinary College of Bavaria, Germany.
Liautard, Dr. A., 18 L. Opera, Paris, France.
McFadyean, Prof. J., Great College St., Camden Town, London, Eng
land.
McEachran, Prof. D., 6 Union Ave., Montreal, Canada.
*Michener, Isaiah, Carversville, Pa.
Mills, Dr. Wesley, Westmount, Montreal, Canada.
Moller, Herr Prof. H., Thierartzlichen Hochschule, Berlin, Germany.
*Nocard, Prof. E., Alfort Veterinary School, Alfort, France.
Perroncito, Prof., Royal Veterinary College, Turin, Italy.
Raymond, J. H., M. D., 173 Joralemon St., Brooklyn, N. Y.
*Roll, Prof. Dr. K. K., Militar Thierarznei Institute, Vienna, Austria.
Smith, Prof. Theobald, Forest Hills, Boston, Mass.
Stein, A., M. D., 28 15th St., New York, N. Y.
Thayer, J. L., M. D., West Newton, Mass.
Thomassen, Prof. Dr., Reichsthierarzneischule, Utrecht, Holland.
Weisse, F. D., M. D., 46 W. 20th St. New York, N. Y.
Welch, Prof. Wm. H., Johns Hopkins University, Baltimore, Md.
*Williams, Prof. William, New Veterinary College, Leith Walk, Edin
burgh, Scotand.

*Deceased.

PRESIDENTS.

1863-64.	Dr. J. H. Stickney, Massachusetts.
1864-65.	A. S. Copeman, New York.
1865-66.	C. M. Wood, Massachusetts.
1866-67.	R. H. Curtis, New York.
1867-69.	R. Wood, Massachusetts.
1869-71.	E. F. Thayer, Massachusetts.
1871-75.	A. Large, New York.
1875-77.	A. Liautard, New York.
1877-79.	C. P. Lyman, Massachusetts.
1879-81.	J. L. Robertson, New York.
1881-83.	W. Bryden, Massachusetts.
1883-85.	W. B. E. Miller, New Jersey.
1885-86.	L. McLean, New York.
1886-87.	A. Liautard, New York.
1887-89.	R. S. Huidekoper, Pennsylvania
1889-90.	C. B. Michener, New York.
1890-92.	R. S. Huidekoper, Pennsylvania
1892-93.	W. L. Williams, Indiana.
1893-96.	W. Horace Hoskins, Pennsylvania.
1896-97.	F. H. Osgood, Massachusetts.
1897-98.	D. E. Salmon, District of Columbia.
1898-99.	A. W. Clement, Maryland.
1899-1900.	Leonard Pearson, Pennsylvania.
1900-1901.	Tait Butler, Indiana.
1901-1902.	J. F. Winchester, Massachusetts.
1902-1903.	S. Stewart, Missouri.
1903-1904.	R. R. Bell, New York.

SECRETARIES.

1863.	A. Liautard, New York.
1864.	R. Jennings, New Jersey.
1865-67.	C. Burden, New York.
1867-69.	J. F. Budd, New York.
1869-74.	J. L. Robertson, New York.
1874-77.	J. D. Hopkins, New Jersey.
1877-80.	A. A. Holcombe, New York.
1880-88.	C. B. Michener, New York.
1888-93.	W. Horace Hoskins, Pennsylvania.
1893-94.	T. J. Turner, Missouri.
1894-95.	Leonard Pearson, Pennsylvania.
1895-1902.	S. Stewart, Kansas and Missouri.
1902-1904.	John J. Repp, Iowa.

MEETINGS.

1863. FIRST MEETING Astor House, New York City, N. Y., June 9 and 10.
1864. Semi-annual (comitia minora meeting)—New York City, N. Y., Jan. 19.
Annual—Astor House, New York City, N. Y., Sept. 6.
1865. Semi-annual—Dr. Liautard's office, New York City, N. Y., March 7.
Annual—Young's Hotel, Boston, Mass., Sept. 5.
1866. Semi-annual—N. Y. C. of V. S., New York City, N. Y., March 5 and 6.
Annual—N. Y. C. of V. S., New York City, N. Y., Sept. 4.
1867. Semi-annual—Young's Hotel, Boston, Mass., March 5.
Annual—N. Y. C. of V. S., New York City, N. Y., Sept. 3.
1868. Semi-annual—N. Y. C. of V. S., New York City, N. Y., March 5.
Annual—Young's Hotel, Boston, Mass., Sept. 1.
1869. Semi-annual—Young's Hotel, Boston, Mass., March 16.
Annual—New York City, N. Y., Sept. 21.
1870. Semi-annual—Philadelphia, Pa., March 15 (no quorum).
Annual—New York City, N. Y., Sept. 20.
1871. Semi-annual—Boston, Mass., March 21.
Annual—New York City, N. Y., Sept. 19.
1872. Semi-annual—Boston, Mass., March 16.
Annual—New York City, N. Y., Sept. 17.
1873. Semi-annual—Boston, Mass., March 17.
Annual—New York City, N. Y., Sept. 16.
1874. Semi-annual—Boston, Mass., March 17.
Annual—Not held, owing to error in date of notices sent out.
1875. Semi-annual—Boston, Mass., March 26.
Annual—Am. Vet. Col., New York City, N. Y., Sept. 21.
1876. Semi-annual—Boston, Mass., March 21.
Annual—New York City, N. Y., Sept. 10.
1877. Semi-annual—Boston, Mass., March 20.
Annual—New York City, N. Y., Sept. 18.
1878. Semi-annual—Boston, Mass., March 19.
Annual—New York City, N. Y., Sept. 17.
1879. Semi-annual—Boston, Mass., March 18.
Annual—New York City, N. Y., Sept. 16.
1880. Semi-annual—Boston, Mass., March 16.
Annual—New York City, N. Y., Sept. 1.

1881. Semi-annual—Boston, Mass., March 13.
Annual—New York City, N. Y., Sept. 20.
1882. Semi-annual—Boston, Mass., March 21.
Annual—New York City, N. Y., Sept. 19.
1883. Semi-annual—Boston, Mass., March 20.
Annual—New York City, N. Y., Sept. 18.
1884. Semi-annual—Boston, Mass., March 18.
Annual—Cincinnati, Ohio, Sept. 16.
1885. Semi-annual—Boston, Mass., March 17.
Annual—New York City, N. Y., Dec. 15.
1886. Semi-annual—Boston, Mass. No meeting of comitia minora, and
no legal meeting held.
Annual—New York City, N. Y., Sept. 21.
1887. Semi-annual—Philadelphia, Pa., March 15.
Annual—New York City, N. Y., Sept. 20.
1888. Semi-annual—Baltimore, Md., March 20.
Annual—New York City, N. Y., Sept. 18.
1889. Semi-annual—Boston, Mass., March 19.
Annual—Brooklyn, N. Y., Sept. 17.
1890. Chicago, Ill., Sept. 16 and 17.
1891. Washington, D. C., Sept. 15 and 16.
1892. Boston, Mass., Sept. 20, 21 and 22.
1893. Chicago, Ill., Oct. 17, 18, 19 and 20.
1894. Philadelphia, Pa., Sept. 18, 19 and 20.
1895. Des Moines, Iowa, Sept. 10, 11 and 12.
1896. Buffalo, N. Y., Sept. 1, 2 and 3.
1897. Nashville, Tenn., Sept. 7, 8 and 9.
1898. Omaha, Neb., Sept. 6, 7 and 8.
1899. New York City, N. Y., Sept. 5, 6 and 7.
1900. Detroit, Mich., Sept. 4, 5 and 6.
1901. Atlantic City, N. J., Sept. 3, 4 and 5.
1902. Minneapolis, Minn., Sept. 2, 3 and 4.
1903. Ottawa, Canada. Sept. 1, 2, 3 and 4.

OFFICERS 1902-1903.

PRESIDENT.

S. STEWART.....1404 Holmes Street, Kansas City, Mo.

VICE PRESIDENTS.

J. G. RUTHERFORD.....Ottawa, Canada.
W. H. DALRYMPLE.....Baton Rouge, La.
E. M. RANCK.....Natchez, Miss.
M. H. REYNOLDS.....St. Anthony Park, Minn.
M. E. KNOWLES.....Helena, Mont.

SECRETARY.

JOHN J. REPP.....Ames, Iowa.

TREASURER.

WM. HERBERT LOWE.....Paterson, N. J.

COMMITTEES 1902-1903.

EXECUTIVE.

Tait Butler, *Chairman.*

J. F. Winchester,
H. L. Ramacciotti,
A. H. Baker,
W. Horace Hoskins,
S. Brenton,
F. Torrance,

Ex-officio { S. Stewart,
J. G. Rutherford,
W. H. Dalrymple,
E. M. Ranck,
M. H. Reynolds,
M. E. Knowles,
John J. Repp,
Wm. Herbert Lowe,

FINANCE.

J. E. Ryder, *Chairman.*

B. McInnes.

Francis Abele.

PUBLICATION.

M. H. Reynolds, *Chairman.*

Roscoe R. Bell,
Richard P. Lyman,

C. J. Marshall,
Carl W. Gay.

INTELLIGENCE AND EDUCATION.

E. B. Ackerman, *Chairman.*

A. T. Peters,
W. J. Hinman,

Paul Fischer,
E. M. Ranck.

DISEASES.

Leonard Pearson, *Chairman.*

V. A. Moore,
S. D. Brimhall,

L. Frothingham,
R. R. Dinwiddie.

ARMY LEGISLATION.

Wm. Herbert Lowe, *Chairman.*

Wm. Dougherty,
Austin Peters,

M. E. Knowles,
Wm. Henry Kelly.

RESOLUTIONS.

D. E. Salmon, *Chairman.*

G. A. Johnson,
N. S. Mayo,

G. R. White,
Alex. Burr.

PHARMACOPOEIA.

L. A. Merillat, *Chairman.*

Roscoe R. Bell,
D. King Smith,
E. L. Quitman,

John J. Repp,
E. M. Ranck,
H. D. Hanson.

STANDARD OF EXCELLENCE AND SOUNDNESS.

G. H. Berns, *Chairman.*

S. J. J. Harger,

M. H. Reynolds.

RESIDENT STATE SECRETARIES 1902-1903.

Alabama—L. Van Es, Mobile.
Arizona and New Mexico—J. C. Norton, Phoenix.
Arkansas—R. R. Dinwiddie, Fayetteville.
British Columbia—Johnson Gibbins, 1003 Granville St., Vancouver.
California—J. J. Summerfield, Santa Rosa.
Colorado and Utah—Thomas Castor, Box 525, Trinidad.
Connecticut—Thomas Bland, Waterbury.
Delaware—H. P. Eves, 507 W. 9th St., Wilmington.
District of Columbia—A. M. Farrington, 1436 Chapin St., Washington.
Florida—J. G. Hill, 324 Forsyth St., Jacksonville.
Hawaiian Islands—W. T. Monsarrat, Honolulu.
Illinois—E. L. Quitman, 489 Jackson Blvd., Chicago.
Indiana—J. R. Mitchell, Evansville.
Iowa—Hal C. Simpson, Denison.
Kansas—N. S. Mayo, Manhattan.
Kentucky—D. A. Piatt, 19 W. Short St., Lexington, Ky.
Louisiana—E. Pegram Flower, Baton Rouge.
Manitoba—W. J. Hinman, Winnipeg.
Maryland—L. A. Nolan, Dillon and Fifth Sts., Baltimore.
Massachusetts—Benj. D. Pierce, 27 Sanford St., Springfield.
Michigan—G. W. Dunphy, Quincy.
Minnesota—J. G. Annand, 414 First Ave. S. E., Minneapolis.
Mississippi—J. C. Robert, Agricultural College.
Missouri—T. B. Pote, 4046 Cottage Ave., St. Louis.
Montana—M. E. Knowles, Helena.
Nebraska—H. Jensen, Weeping Water.
New Hampshire and Maine—Lemuel Pope, Jr., 101 State St., Portsmouth.
New Jersey—T. E. Smith, 309 Barrow St., Jersey City.
New York—Wm. Henry Kelly, 233 Western Ave., Albany.
Nevada and Idaho—J. Otis Jacobs, Reno.
North Carolina—A. S. Wheeler, Biltmore.
North and South Dakota—W. F. Crewe, Devils Lake.
Nova Scotia—Wm. Jakeman, Halifax.
Ohio—A. S. Cooley, 1184 E. Madison Ave., Cleveland.
Ontario—John W. Groves, Hamilton.
Oregon—Wm. McLean, 328 Fourth St., Portland.
Pennsylvania—C. J. Marshall, 2004 Pine St., Philadelphia.
Quebec—Chas. H. Higgins, Department of Agriculture, Ottawa.
Rhode Island—Thos. E. Robinson, 65 Main St., Westerly.
South Carolina and Georgia—G. E. Nesom, Clemson College.
Tennessee—W. C. Rayen, Nashville.
Texas—M. Francis, College Station.
Washington—Clarence Loveberry, care Frye-Bruhn Co., Seattle.
West Virginia—F. P. Ruhl, Fairmont.
Wisconsin—J. T. Hershheim, Market and Exchange Sts., Kenosha.

CONSTITUTION AND BY-LAWS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

CONSTITUTION.

ARTICLE I.—This association shall be known as “THE AMERICAN VETERINARY MEDICAL ASSOCIATION.” It shall consist of stated and honorary members.

ARTICLE II.—The purposes and object of the association are to contribute to the diffusion of true science, and particularly the knowledge of veterinary medicine and surgery.

ARTICLE III.—The officers of this association shall be a president, five vice-presidents, a secretary, and a treasurer, all of whom shall be elected by ballot, at each anniversary meeting, and a majority of all the votes present shall be necessary to a choice. They shall be elected for one year, or until their successors are chosen, to whom they shall, without delay, deliver and transfer all moneys, books, manuscripts, vouchers, and all other property or papers belonging to the association in their possession.

ARTICLE IV.—The board of censors, to consist of seven members, shall be appointed by the president to serve for one year. The several officers of the association with the board of censors shall constitute the Executive Committee.

ARTICLE V.—The duties of the officers, requisites of membership, time of the annual or other meetings of the said association, and such other regulations as may be necessary and proper for the government of the same, shall be provided for by by-laws.

BY-LAWS.

CHAPTER I.—PRESIDENT.

ARTICLE I.—It shall be the duty of the president to preside at all meetings of the association, and to preserve order and decorum.

ARTICLE II.—He shall appoint all committees, unless otherwise ordered by special resolution.

ARTICLE III.—He shall annually appoint resident state secretaries, who shall perform such duties as may be assigned to them.

ARTICLE IV.—He shall have no vote, except on questions where the votes are equally divided, and in the election of officers.

ARTICLE V.—He shall keep on file all documents and certificates in relation to the association that may be deposited with him, and these he shall deliver to his successor.

ARTICLE VI.—The president shall perform all the duties prescribed by the laws of the association and resolutions thereof.

CHAPTER II.—SECRETARY.

ARTICLE I.—The secretary shall keep the records of the proceedings of the meetings of the association. He shall receive all applications, fees and dues for membership, and pay the same over to the treasurer, at least once in six months, taking his receipt therefor.

ARTICLE II.—It shall be the duty of the secretary to notify each person proposed, and transmit him a copy of the by-laws, calling his attention to the first, second, third and fourth sections of Chapter VIII. of the by-laws.

ARTICLE III.—He shall notify the chairman of each committee appointed by the president or the association, stating the name and duties of the committee, and he shall also perform such other duties as may be assigned to him.

ARTICLE IV.—The secretary shall be exempt from all dues.

ARTICLE V.—He shall by virtue of his office be a member of the Publication Committee, and shall receive an annual salary of three hundred dollars.

ARTICLE VI.—He shall publish annually a list of the officers, standing committees, and members, with their addresses.

CHAPTER III.—TREASURER.

ARTICLE I.—The treasurer shall give security for the trust reposed in him, whenever the association shall judge it requisite.

ARTICLE II.—It shall be the duty of the treasurer to put all the moneys of the association into one fund, to be appropriated to the payment of current expenses, and for such other purposes as the association may at its meetings direct, or as may be ordered by the president, attested by the secretary.

ARTICLE III.—He shall pay by order of the president all bills duly audited by the Finance Committee.

ARTICLE IV.—At every annual meeting he shall give a detailed statement of his receipts and disbursements, duly audited and signed by the Finance Committee.

CHAPTER IV.—EXECUTIVE COMMITTEE.

ARTICLE I.—The president, one vice-president or president *pro tempore*, together with four censors, shall constitute a quorum for the examination of candidates for membership; but any five members may constitute a quorum for the transaction of business.

ARTICLE II.—The Executive Committee shall meet at least once a year, upon the call of the president, at any time prior to the annual meeting.

ARTICLE III.—The president may call a special meeting of the Executive Committee whenever he shall deem it necessary.

ARTICLE IV.—The journal of the proceedings of the Executive Committee shall be kept by the secretary and read at each annual meeting, together with the names of the attending and absent members.

ARTICLE V.—It is incumbent upon the board of censors to be present at every meeting; but when unavoidably absent the vacancy shall be temporarily filled by the president, vice-president or president *pro tempore*.

ARTICLE VI.—It shall be the duty of the Executive Committee to examine the credentials and vouchers of all applicants for membership. They shall report in writing the result of their examination to the president of the association.

ARTICLE VII.—The Executive Committee shall be invested with power to hear or determine upon the complaints filed before them in writing, relative to the improper or immoral conduct of any member, and shall, if thought advisable, report upon such complaint to the association at the next annual meeting, the offending member being duly notified of such complaint, and allowed the privilege of defense; and such member, if deemed guilty by a vote of two-thirds of the members present, shall cease to be a member of the association.

ARTICLE VIII.—The Executive Committee shall make the necessary arrangements for the meetings of the association, and execute such other duties as the association shall direct.

ARTICLE IX.—The president shall have the power to order the payment of any or all bills that may be presented to the secretary during the year prior to the annual meeting, if in his judgment they are true and correct, and, if he deem it wise, to make immediate payment of the same. All such expenditures, however, must be accounted for at the annual meeting of the Finance Committee.

CHAPTER V.—COMMITTEES.

ARTICLE I.—The following committees shall be appointed by the president at the annual meeting, namely: The Committee on Intelligence and Education, Committee on Diseases, Finance Committee, Prize Committee, and a Publication Committee.

ARTICLE II.—The Committee on Intelligence and Education shall collect and report to this association recent veterinary medical facts and intelligence.

ARTICLE III.—It shall be the duty of the Committee on Diseases to investigate the character and extent of prevalent diseases throughout the United States, and report at each meeting.

ARTICLE IV.—The Finance Committee shall audit the treasurer's account and also all other accounts that may be presented to the association for payment; and they shall also devise ways and means to raise

funds when necessary to meet the expenditures of the association, and report their proceedings at each annual meeting.

ARTICLE V.—It shall be the duty of the Prize Committee to examine all essays presented to them, and award prizes if the papers are in their judgment worthy of the same, and their decision shall be final.

ARTICLE VI.—The Publication Committee shall have charge of the publishing of all essays, papers, reports, etc., submitted to them by the association.

ARTICLE VII.—The president and secretary shall be *ex-officio* members of the several permanent committees, except the Committee on Publication, of which the secretary shall be an active member, and the president shall have the power to convene them whenever, in his judgment, it shall be necessary.

CHAPTER VI.—CANDIDATES FOR MEMBERSHIP.

ARTICLE I.—Any applicant for membership shall submit his name upon one of the association's application blanks, duly vouched for by one or more members of the association, or by the resident state secretary of his respective state. He shall be a graduate of a regularly organized and recognized veterinary school which has a curriculum of at least three years, of six months each, especially devoted to the study of veterinary sciences, and whose corps of instructors shall contain at least four veterinarians. If of a medical school a similar curriculum shall prevail. This association will admit to membership graduates of an agricultural college requiring a four-year course, who may be admitted to the second year in any three-year-course veterinary college and graduated therefrom; provided, said graduate of an agricultural college has been required to take the following studies or their equivalent: Two or more years of not less than three hours a week in each of the following: Elementary physiology, botany, zoölogy (including animal parasites), agriculture (including breeds of stock and stock breeding), and veterinary science under a qualified veterinarian.

Second, that he is of moral character and reputable business methods.

This is to go into effect Jan. 1, 1893. It shall not be retroactive, nor apply to applicants who were college matriculants prior to its passage, or during the year 1892.

Form of Application Blank.

This application should be filed with the secretary at least thirty days before the first Tuesday in September; filed in the applicant's own handwriting, and so indorsed by his vouchers, and accompanied by the initiation fee.

To the American Veterinary Medical Association:

I hereby make application for membership in your society. My age is _____ years. I am a graduate of _____ College, year _____. My residence is _____.

Signed.

Degree.

Vouchers.

_____ Degree.	} Members or resident state secretary of the American Veterinary Medical Association.
_____ Degree.	

ARTICLE II.—The credentials of all applicants shall be referred to the Executive Committee, who shall report upon the same, in writing, to the president.

ARTICLE III.—All candidates reported favorably by the Executive Committee shall be balloted for by the association. Those receiving a two-thirds vote of the members present shall become members of the association.

ARTICLE IV.—All applications of candidates for membership adversely reported shall not again be entertained until the expiration of one year.

ARTICLE V.—A member-elect shall, within one year, sign the constitution and by-laws, and receive his certificate of membership. If he fails to do so within this time, he ceases to be a member-elect.

ARTICLE VI.—The following shall be the

Form of Certificate of Membership.

These presents are to certify that _____, having been duly examined and found worthy, is this day admitted a member of the American Veterinary Medical Association, incorporated in the year of our Lord one thousand eight hundred and sixty-three.

In testimony whereof, we have fixed our hand and the _____ of the association, this _____ day of _____, 19—.

Censors:

_____, Secretary.
_____, President.

CHAPTER VII.—HONORARY MEMBERS.

ARTICLE I.—Any member may propose a candidate as an honorary member; the rank or station held by him shall be furnished in writing by the proposer at the time of such proposal, which application shall be presented to the Executive Committee, and acted upon at the next meeting. The person so proposed shall be balloted for at a subsequent meeting. A majority of votes shall constitute him an honorary member.

ARTICLE II.—Not more than three honorary members shall be annually elected.

ARTICLE III.—Honorary members may take part in debate, but shall not be entitled to vote.

ARTICLE IV.—The President of the United States for the time being shall be *ex-officio* an honorary member. The following shall be the

Certificate for Honorary Members.

This is to certify that we, the president, vice-presidents and members of the American Veterinary Medical Association, have received _____ as an honorary member of our association.

In witness whereof, we have caused these presents to be signed by our president and secretary, and sealed by our common seal this _____ day of _____, 19—.

_____, President.

_____, Secretary.

CHAPTER VIII.—CONTRIBUTIONS AND ARREARS.

ARTICLE I.—The initiation fee shall be five dollars.

ARTICLE II.—The yearly dues of the association are three dollars, payable in advance.

ARTICLE III.—The association, at the annual meeting, may assess such amounts as shall be necessary to meet the necessary expenses.

ARTICLE IV.—Any member eighteen months in arrears shall be notified twice by the secretary within six months; and if said arrears are not paid before the next regular meeting of the association the secretary shall report said delinquent to the Executive Committee for suspension.

CHAPTER IX.—ORDER OF BUSINESS.

ARTICLE I.—1. The secretary shall call the roll.

2. He shall read the minutes of the previous meeting.
3. Unfinished business of last meeting.
4. Report of the Executive Committee.
5. Report of all committees other than executive.
6. Admission of new members.
7. Applications for membership.
8. Election of officers.
9. New business.
10. Papers and discussions.

CHAPTER X.—MEETINGS OF THE ASSOCIATION.

ARTICLE I.—The annual meeting of the association shall be held on the first Tuesday and following days of September of each year. The

Executive Committee shall select the place and hour of meeting, unless otherwise directed by the association, due notice of which shall be given by the secretary.

ARTICLE II.—Special meetings shall be called by the president, or in his absence by the vice-presidents, upon the written request of ten members, specifying the particular object of such meeting, a notice of which shall be given at least one month before said meeting. The president is also authorized, at his discretion, to call special meetings, duly notified as above.

ARTICLE III.—At a special meeting no business except such as shall have been specified in the requisition and in the published call for the meeting shall be transacted.

ARTICLE IV.—The annual meetings may be adjourned from day to day.

ARTICLE V.—Twenty-five members shall form a quorum for the transaction of business, and a quorum shall always be presumed present except at annual meetings, unless an actual count be called for.

ARTICLE VI.—In the absence of the president and vice-presidents, the senior past president present shall preside. In case none should be present, the association shall elect a president *pro tempore* from the floor.

ARTICLE VII.—Every member shall observe order and decorum in the association; shall pay due respect to the president and other officers, and to his fellow members; and no member shall withdraw during a session without special permission from the chair.

ARTICLE VIII.—All questions of order, whether in debate or otherwise, not specially provided for, shall be decided by the usual parliamentary rules.

CHAPTER XI.—CODE OF ETHICS.

ARTICLE I.—No member shall assume a title to which he has not a just claim.

ARTICLE II.—No member shall endeavor to build up a practice by undercharging his brother member.

ARTICLE III.—No member shall speak disrespectfully of another, or in any way attempt to lessen his professional reputation, particularly for his individual advancement.

ARTICLE IV.—In all cases of consultation it shall be the duty of the veterinary surgeon in attendance on the case to give the opinion of the consulting veterinary surgeon (whether favorable to his own or otherwise) to the owner of the patient in the presence of all three. In case of the absence of the owner the veterinary surgeon consulted may, after giving his opinion to the attending veterinary surgeon, transmit it also in writing to the owner through the medical attendant. It shall be deemed a breach of this code for a consulting veterinary surgeon to revisit a patient without special invitation or agreement.

ARTICLE V.—In advertising, the veterinary surgeon shall confine himself to his business address. Advertising specific medicines, specific

plans of treatment, advertising through the medium of posters, illuminated bills, newspaper puffs, etc., will not be countenanced by the association.

ARTICLE VI.—Secret Medicine. Any person who shall advertise or otherwise offer to the public any medicine, the composition of which he refuses to disclose, or if he proposes to cure disease by any such secret medicines, shall be denounced as an unworthy member, and be expelled from the association.

ARTICLE VII.—It shall be deemed a violation of the code of ethics for any member of this association to contract with or through the officers of any live stock insurance company for the professional treatment of the member's stock so insured; but this rule shall not prevent any member from becoming the examiner of risks and to act in the capacity of an expert for the same.

ARTICLE VIII.—Every member shall observe the code of ethics adopted by this association, and be answerable to the Executive Committee for any breach of the same.

CHAPTER XII.—SUSPENSION AND ALTERATION OF BY-LAWS.

ARTICLE I.—Any motion for suspension of by-laws must be offered in writing, and must be adopted by a two-thirds vote of the members present.

ARTICLE II.—All proposals for alteration of by-laws shall be stated in writing. No alteration proposed by members shall be acted upon until it is referred to the Executive Committee and presented anew by them. All the members of the association shall be notified at least ten days previous to any action thereon.

ARTICLE III.—A suspension of the rules may be made by unanimous consent at any meeting of the association for the election of honorary members.

PROCEEDINGS
OF THE
FORTIETH ANNUAL CONVENTION
OF THE
American Veterinary Medical Association,
HELD AT THE
CITY HALL, OTTAWA, CANADA.
SEPTEMBER 1-4, 1903.

TUESDAY, September 1, 1903.

Dr. S. Stewart, president of the association, called the convention to order at 10:15 a. m.

DR. STEWART: *Ladies and Gentlemen:* The appointed hour has arrived, and this is the selected place. I now convene the fortieth annual session of the American Veterinary Medical Association.

The holding of this meeting of the American Veterinary Medical Association in the Dominion of Canada is an innovation, but we trust it is a timely one. We are delighted to come to her capital city and to be favored with pleasant weather. We have the honor of having with us the Hon. Frederick Cook, mayor of Ottawa, who will offer words of welcome to us on this occasion.

ADDRESS OF WELCOME.

HON. FREDERICK COOK, MAYOR OF OTTAWA.

Mr. President, Ladies and Gentlemen of the American Veterinary Medical Association:

I deem it an especial honor to be privileged to address a few words of welcome to such a representative body as yours. During the nearly two years that I have been chief magistrate of this city it has been my good fortune to welcome many bodies such as yours, representative of our English people from across the Atlantic; representative of our English people residing on both sides of the line on this North American continent. I feel a special pleasure in greeting you, first, because of your vocation. It seems to me that there is no profession in life nobler than that given to the alleviation of human suffering, and we are honored this morning by the presence in this gathering of the dean of the medical profession of Canada, in the person of our esteemed friend, Sir James Grant; and next to the medical profession surely there can be no question but that your profession, for the alleviation of suffering in dumb animals, ranks next to that to which I have alluded.

We are glad to welcome you to-day because you have brought your ladies with you. We are always delighted to see the ladies from across the line, because we know that they are the ones who carry away pleasant impressions of our city, and do much to make known its fame abroad.

I greet you this morning, because, as I understand from what has just fallen from your president, this is the first time your association, composed as it is of representatives of both countries, international in its character, has met beyond the confines of the United States. We are proud that you have selected this, the capital city of the Dominion, as the scene of your deliberations, and we are satisfied that the result of your conference will be such as to enhance the knowledge of the delegates and tend to benefit the profession as a whole.

Ottawa people are naturally proud of their city. It is not a very old city. It is less than fifty years since our late Queen Victoria selected Ottawa as the capital of the old Province of Canada; a little over thirty-five years since these provinces—

the scattered provinces of British North America—were united in a federal compact; and from that time the future of Ottawa was assured by its being chosen as the federal capital. Since then it has progressed by leaps and bounds.

The city of Ottawa possesses many natural advantages. We have extraordinary water powers, developed and undeveloped, for the generation of motive power for manufacturing establishments; we have beautiful surroundings, and we cannot but believe that there is a great future in store for us. True it is that we cannot boast of the magnificence of such a capital as the city of Washington, but yet, with the advantages to which I have alluded, with the enterprise of our citizens and with the aid of the federal government to which we have been looking for some years, and which latterly we have been receiving, I am sanguine that in the course of a very few years we shall have here a city which for attractiveness cannot be excelled upon the North American continent. (Applause.)

Reference to our government leads me to mention this fact: that we have had friendly interchanges of ideas from the public men of both countries in the way of the best researches which the two countries have produced, and I am glad indeed this morning to greet Dr. Salmon, who, I understand, is to give us an address after I have concluded, representing, as he does, the public official life of the United States,—a gentleman who is not a stranger in Ottawa, and whose name is familiar among the professional and public men throughout the Dominion of Canada.

I realize, also, that even your own great country, the United States, has called upon our public officials in their representative capacities at different times, and so long as this pleasant interchange of feeling takes place between the two countries I am sure it will tend to cement that harmony and good feeling which we desire should always be perpetuated amongst our peoples. (Applause.)

I greet you especially to-day because you spring from the same parent stock as we do; are students of the same glorious literature; joint inheritors of the noblest traditions of our race; fellow workers in the sacred cause of liberty and human progress. Let me remind you that, though living under different flags, the colors in those flags are the same; and as to-day we see the two flags joined together, so may the two nations which these emblems represent be ever united in the bonds of amity and broth-

erly feeling, ever in the vanguard for the advancement of civilization.

Ladies and Gentlemen, the gates of the capital city of the Dominion are thrown wide open to the members of the American Veterinary Medical Association. May your meetings be productive of good to all your membership, and when the hour arrives (regretted as it will be) for departure to your homes, may you carry away with you the pleasant recollections of your all too brief sojourn amongst us. (Applause.)

RESPONSE TO THE ADDRESS OF WELCOME.

D. E. SALMON, WASHINGTON, D. C.

Mayor Cook, Mr. President, Ladies and Gentlemen:

It is indeed a pleasant privilege which I have of responding to this very cordial and generous address of welcome. I can only wish that one more competent had been assigned to this duty in order that a fitting response might be made to these warm words which you, Mr. Mayor, have seen fit to express to us. It reminds us, as we listen to your welcome, that, although you are living to the north of us in a colder climate, the effect of this has been but to make your hearts more warm and generous. But speaking of the fact that you are to the north of us I would say that it has recently been brought to my attention that perhaps we lay too much stress upon this fact. A few days ago I was talking to a friend of mine in Boston, and you know, sir, the people of Boston have all the information of the world at hand, and when we meet them and enter into conversation we at once realize that we have run up against an encyclopedia. This gentleman said, in discussing the resources of this great country: "Do you realize that Windsor, Ontario, is in about the same latitude as Providence, Rhode Island?" I said, "No; there must be a mistake." He said: "You look upon the map, and see if this is not so." I at once selected a reliable map, and, although I had looked at maps before, I must say that I was somewhat astonished to find that this province of Ontario, in which we now stand, extends as far south as the general boundary line between Pennsylvania and New York. There are cities and towns in Pennsylvania that are farther north than some of the towns of this

province. I presume some of you will be as astonished as I was to learn this. But when you consult the map you will see that this is literally true.

We have in our association, Mr. Mayor, representatives of Canada as well as the United States. This association was formerly called the United States Veterinary Medical Association, but the representatives of the profession in Canada from time to time came to our meetings, and as years rolled on they came more frequently and in greater numbers, until we saw it would be profitable for us to extend the scope of this association and include in its membership the veterinarians of the whole American continent. So we changed the name and the purpose of that association, and now it is the American Veterinary Medical Association, and we use the name American in its broadest sense. Now it has been in the past somewhat of a question with us whether the veterinary profession of Canada annexed the veterinary profession of the United States, or whether the annexation was the other way. But I can assure you that, after coming to your beautiful city and hearing your cordial words of welcome, and being entertained as we are to be here, we will go back feeling that the annexation is from this side, and that we are annexed to Canada; and we shall be proud of the relation which exists between the profession of the United States and the profession of Canada. I might say further in reference to this question of annexation that there have been those in this country, and some in ours, who have held a dream of the political union of the two countries. Time will tell whether such a dream will ever be realized, or whether it will ever be desirable for either of the two countries that it should be realized. But what we know to be a fact is that the two people are becoming more and more alike by association with each other. They are coming to work more and more together; to realize the high ideals of the race. And these two flags, sir, are seen side by side more frequently as years roll on, and they are coming to mean more and more nearly the same thing. They represent two great nations, the chief object of whose existence is the advancement of knowledge, the amelioration of suffering and the uplifting of the human race. (Applause.) And in our sphere as a veterinary medical association, we are working and endeavoring to do our part to secure a successful accomplishment of this object. This association is

working, not only for the alleviation of the suffering of animals, but it is working to safeguard the public health. We have in view both of these objects, and there are many diseases with which we work, many diseases which we are investigating and endeavoring to control, the control of which will mean more for the human race than it does for the animals with which we are more directly connected.

Now, Mr. Mayor, in conclusion, I wish to say again that we appreciate fully and completely the cordial and generous words of welcome which you have extended to us. We are very glad that we have had the opportunity to meet here in your city, the capital city of the Dominion, and we shall go home feeling that this meeting has been a memorable one; we shall be proud of the honor which you have conferred upon us by welcoming us so warmly to your city and by entertaining us as you propose to do. The only thing we can say with reference to this entertainment is, that, if anything, it is too generous and too complete. While we enjoy it and appreciate it, we are still bound to remember that the chief object of this meeting is work; that we came here to compare our knowledge in regard to subjects in which we are interested. We come here with the object in mind of advancing the science of veterinary medicine, and to disseminate information for the benefit of the two countries. These are the principal objects of our visit, and if we fail to take advantage of all the entertainment which you offer to us we beg to assure you that it is not because we fail to appreciate your efforts and hospitality, but because the time at our command and the duties which we have devolving upon us make it impossible for us to do more.

Again I wish to thank you for the welcome extended to us, and assure you of its hearty appreciation.

PRESIDENT STEWART: Alderman Payment, member of the local committee, desires to make an announcement at this time.

ALDERMAN PAYMENT: I am not going to make a speech, but I wish to announce to the ladies that if they will place themselves at the command of the reception committee we will take them over the city. While the men are doing business it will be our pleasure to entertain the ladies as much as possible, and I sincerely hope that when you have left the city and gone back to your homes you will not be sorry you came here. Although you

do not find the sign "Welcome" everywhere, nevertheless you are welcome. I wish to say that we will meet at the city hall at half past two.

The president then read his address, as follows :

PRESIDENT'S ADDRESS.

S. STEWART, KANSAS CITY, MO.

The central purpose for which this association has been maintained is the upbuilding of the veterinary profession in America on a broad and substantial basis of scientific capability and a high quality of citizenship. The association, beginning forty years ago in the city of New York, has steadily maintained the principal object, thereby winning an ever-increasing membership and a continuously widening influence. In 1890 its local character was made national through holding its annual meeting in Chicago and extending its membership over a wide area in the northern states. From the date of that meeting until the present, growth and development have been marked by rapid strides. The central purpose as well as the scientific character of our association has not been limited by boundary lines, either state or national. A cordial invitation has been extended to all qualified veterinarians to join in and have a part in promoting the welfare and the growth of this organization. Meeting places have been selected at points on or near the national boundary line that the veterinarians of the north country might find it convenient to attend the meetings and participate in the great work.

To show more clearly the sincerity of its aims, and to remove any doubts which Canadian veterinarians may have entertained as to the breadth of purpose of this organization, in 1898 the name was changed from United States Veterinary Medical Association to American Veterinary Medical Association, and invitations to come and help were made still more pressing. The wisdom of this change in name is made manifest by the considerable number of Canadian veterinarians who have attended recent meetings and affiliated as active members. We believe this attendance and affiliation has brought much good to us and good to them. The very cordial invitation so graciously extended by Dr. Rutherford and his Canadian brethren to hold the fortieth annual meeting in their capital city was accepted without reser-

vation, and we have come to this meeting in the full assurance that we will be greatly benefited, and in the hope that we may render a good service to the Dominion by interesting all her veterinarians in the work of this association.

Wherever our association meetings have been held confidence in and appreciation of the great value and worth of the true veterinarian is more firmly fixed in the public mind. Local veterinary organization and coöperation is greatly strengthened, resulting in much public good. The veterinarians individually are more thoroughly imbued with the intrinsic worth of their profession, and are stimulated to greater scientific growth and public virtue. The hope is entertained that our presence in Ottawa will fix more deeply in the minds of all veterinarians of the Dominion that this is an active, progressive, forceful and helpful scientific organization, and one which they can strengthen and render more useful by joining its ranks.

This association has always labored for a higher educational standard, and after years of discussion it determined to bring its influence to bear through setting a higher requirement for membership, which took effect Jan. 1, 1893. Gradually the standard taken by the association made itself felt, and a number of veterinary colleges raised their standard so that graduates would be eligible to membership, and this achieved a great gain for our profession. In 1897 the United States Bureau of Animal Industry established a like standard for eligibility to enter the veterinary service in the department of agriculture. So potent was the combined influence of these two regulations that practically all of the veterinary colleges of the continent have announced the three-year standard. There remains but one college where students attend in any considerable numbers which has not yet yielded to the good influence of this upward movement, but it would seem that the time must be near at hand when even this one will recognize that its usefulness will be greatly enhanced by joining in the grand movement for giving the younger veterinarians a more complete preparation for the great work before them than heretofore obtained.

After thoughtful study of the situation I am convinced that this association will be justified,—nay, more, it becomes its duty, not only to itself but to the oncoming recruits in the field of veterinary science,—to more closely scrutinize the work of the

several veterinary colleges. Notwithstanding that the managing officers or directors of the several colleges announce a course of instruction covering three terms of six months or more each, yet there is opportunity and temptation to evade the announcement, and permit students to receive unearned credits for attendance or proficiency, and allow them to graduate with very imperfect qualifications. In this way, in part at least, they may evade the standard announced, yet give with their diplomas the coveted privileges of eligibility for admission into this association and to compete for appointment in the civil and military departments of state and national government; also, the right to practice in states where a three-term diploma is the passport to the privilege of practice.

Our membership is now so widespread, our purposes so well defined, and our influence so strong that all honestly conducted veterinary colleges will grant access to their enrollment records for examination by officers of this association duly appointed to make such investigation. I recommend that the president be authorized and instructed to select from the membership persons conveniently near to each of the several colleges, whose duty it shall be to visit the colleges at least twice during a session, and make a list of the students then enrolled and in attendance, showing in which of the three several collegiate years such students are enrolled, and in case of second and third term students, giving basis for advanced standing; and to report their findings to the secretary or committee on intelligence and education for permanent record. The visits of said investigators should be made soon after the opening of the college term, and approximately near the close of said term. Such scrutiny and recording will strengthen very greatly the hands of the governing body whose purpose it is to fully comply with the spirit of our membership requirements in this particular, as well as provide our organization with the data by which to determine the eligibility of future applicants for membership.

There is an institution in Kansas City which holds forth to be a veterinary college, and which has been issuing diplomas for several years past under conditions which this organization does not countenance. During the session of 1902-1903 said institution had not to exceed five students in attendance during the part of the college term prior to the holiday season, yet on March 1st

thereafter the newspapers gave public notice that that institution graduated seventeen. While that institution is not an accredited one by the American Veterinary Medical Association, the holders of its diplomas are admitted in the senior classes of some recognized veterinary colleges and graduated with one term's attendance. There is no data at our command by which it can be shown that such graduates are not eligible to membership in this body if they make application.

You will recall that one of the conditions for membership in this association applicable to those who matriculated after Jan. 1, 1903, was that they should be graduates of colleges requiring three terms instruction of six months each. It is known by all who have cared to investigate that few, if any, of the colleges, have lived up strictly to these requirements, and yet the association has accepted their graduates as members. They have given full credit for attendance at a college which advertises its terms to be less than five and one-half months, and their diploma has rendered the holder eligible for membership in this body.

Five American colleges which heretofore required but two terms' attendance for graduation have announced this year that hereafter they will require attendance of three terms of six months each, thus placing them in the list of recognized veterinary colleges. Let us as an association do all that lies within our power to encourage these institutions in the maintenance of their new announcement at the highest possible degree of efficiency.

Some of our members have already begun to advocate an increase in the length of college attendance for eligibility in this organization. While it is very desirable, and the older and financially well established colleges may be able, to carry out a four-year curriculum, this association will do well to see to it first that its present requirements are lived up to in letter and in spirit before a proposed advance is made. The standard already achieved has been the result of ten years of patient yet forceful pressure brought to bear by our membership, and it will be only when we have fully established our present regulation that we will be ready to take a step in advance. I believe we are in position to assist the various colleges in complying fully with the requirements for membership in this association, and it is our duty to do so. I respectfully urge that this association take action looking to the carrying out of a plan for visiting the colleges and compiling records before we close this meeting.

Owing to the general prosperity which has overspread this country during recent years, and particularly through the enhancement of the value of domestic animals and the profitability of their production, the veterinary profession is everywhere enjoying a period of great prosperity. The worthy and competent veterinarian who has become established in any community finds his services in great demand, and there is a willingness on the part of the people to give him ample compensation for services rendered. The success attendant upon animal industry is very marked, and the field for usefulness of the veterinarian very greatly extended. In the regions where the qualified man would have found meager employment a few years ago there is now demand for many times the number who have located therein. In all that area extending from the Gulf of Mexico to the northern lakes of Canada there is a rapidly developing field for veterinarians, and many years must elapse before this field will be fully occupied. It will give employment to thousands of properly qualified men. In the great State of Illinois there are twenty-five or thirty counties in which no veterinary graduate resides, and the people are obliged to depend upon non-graduate practitioners. The State of Missouri has 116 counties, and, not counting those resident in its three large cities, there are less than a half hundred graduates to serve this vast area. There is every encouragement, it seems to me, for young men to enter the ranks of the veterinary profession, and still greater encouragement if they seek that thorough and practical veterinary training which will fit them to meet the demands of this immense and rapidly growing agricultural interest. This organization can do the profession at large and future members a great service by instilling into the minds of students an ambition to acquire the highest possible training and to maintain the highest degree of personal integrity.

Our association maintains a code of ethics, and requires that each applicant for membership shall accept the code as a condition for admission. There is no doubt but that such code of ethics is very useful, and tends largely to maintain a friendly and professional relation between the members, and aids greatly in marking a distinction between a right-minded professional man and a charlatan. Ethics is a problem of education, and in some of the colleges, if the graduates are to be believed, students are

led to understand that it is not beneath the dignity nor unbecoming a veterinarian to resort to sharp practice in dealing with his client, and also his competitors. If there are men in our profession who pose as teachers, and who do not set forth by precept and example that sterling integrity and honesty of purpose which should guide the action of the young veterinarian, members should take this into account when recommending students where to seek instruction. When such young veterinarians who have received bad tutelage become applicants for membership in this organization they are wont to believe that the code of ethics was simply made to direct the stupid and enhance the opportunities of the shrewd. There is a duty on the part of our members, especially the older ones, to bring to bear every rightful influence in directing the new members, who do not seem to appreciate or realize the wholesome moral and professional influence of the maintenance of our code. They should feel that the younger member would willingly do what he could to maintain a high standard of ethics if he fully appreciated its import. In several of our large cities the neglect of attention to this matter, coupled with the weakness and perversity of violators of the code, has wrought professional dissension and converted bodies of veterinarians who should have been on terms of friendly coöperation into antagonism with each other, and opened the way to general discord and unprofessional vagaries. Let us feel that we are in some measure responsible, or at least obligated, to use our personal influence to overcome these conditions and bring about friendship and coöperation.

Each year adds to the number of states in which laws regulating veterinary practice are enacted, and a wholesome regulation of the same gradually brought about. Colorado and North Carolina have been added to the list of states having practice laws, and much credit is due to the few active veterinarians in these commonwealths in securing such legislation. Failure to secure such laws in other states does not necessarily reflect upon the veterinarians therein, because local conditions sometimes make impossible the procurement of righteous laws for the time being. Let us give our moral support to members in these states. It will encourage them, and help them to final success.

True fraternity is developed by closer relationship in duties and responsibilities, as well as through verbal obligations and

social amenities. Our highly esteemed ex-president, Dr. A. Liautard, has, by voice and pen, pointed out an opportunity to strengthen our fraternal bonds through a mutual organization for bearing a part of the burden of misfortune by accident or death, which may be the lot of some fellow member. Dr. Wm. Dougherty, our old-time friend and professional brother, will offer during this meeting a plan for carrying into effect an organization for mutual benevolence, and I most heartily commend it to your consideration. While the professional labors of the veterinarian involve some hazard of life and limb, present knowledge of sanitary precautions, coupled with modern appliances for restraint of animals, has greatly lessened the hazard. Notwithstanding the changes just noted, corporations offering accident and life insurance class the veterinarian in the extra hazardous list, which places him at great disadvantage from an insurance point of view. Through a rightly planned organization, we can secure for ourselves protection at actual and reasonable cost, and provide for dependent ones in times of greatest need.

The establishment of a clinic as a phase of the work of this association has served to fix more clearly the purpose of this organization to make its scientific labors of tangible value to members engaged in general practice. With each succeeding year the clinics should be made to include a greater variety of cases; to include what are termed medical as well as surgical cases, and when possible cases demonstrating papers presented. The clinics have added a living, vital force to our meeting, and every member should take a personal interest in enhancing their value and ensuring their perpetuity.

For several years past a number of the most active workers in this association who are connected with state educational institutions have found it extremely inconvenient, if not impossible, to attend our meetings, because they occur on the same date fixed by the colleges and universities for the opening of the collegiate year. A proposal to change the by-laws, by making the date of meeting earlier in the year, will come up for consideration during this meeting. While it is quite certain that no date can be fixed which will not make it inconvenient for some member to attend, I believe the date could be made one, or even two, weeks earlier with great advantage to the association, yet without special inconvenience to the membership in general.

Every member must observe with gratification the increase in the number of ladies who accompany the members and visiting veterinarians. Their presence not only contributes an indescribable charm which causes all to look forward with great pleasure to each annual meeting, but also wields a moral force which is doing much to dispel from the public mind an old-time impression that the members of the veterinary profession are an ungentlemanly class and their profession an unworthy one. We believe in the ladies; let them help us grow better and more worthy. Let us continue to make our meetings most pleasant outings for them.

The splendid program prepared for this association, including as it does papers bearing on all phases of the veterinarian's life work, indicates the great vitality of this association. It is also a monument to the energy and faithfulness of our most efficient secretary. The preparation for our clinical division, also the hospitable arrangements made for our entertainment, merit unstinted praise for our local committee of arrangements. This magnificent gathering of veterinarians from all points of the compass insures a full and free discussion of the problems to be presented here. Everything seems to conspire to make this a grand and successful meeting. I feel confident of your hearty cooperation in the duties before us at this time, and I believe we shall ever remember the Ottawa meeting as one of unusual value and inexhaustible pleasure.

PRESIDENT STEWART: Dr. Rutherford, chairman of the local committee, desires to make some announcements.

DR. RUTHERFORD: We have a few small items on the social program which I think you should fully understand. As has been already stated by Alderman Payment, there will be a trip for the ladies, and there possibly may be a few professional backsliders who may prefer their company and the sights of Ottawa to the pleasures of the meeting. They will be shown over the city, carefully guarded and chaperoned, and will have an opportunity of seeing the beauties of Ottawa. This will be at half past two. In the evening there will be an informal reception at the Russell House, at which we hope every one will be present. This is to afford an opportunity for the different members and visitors, their wives and other friends, to become acquainted with one another.

I think I had better mention the fact that to-morrow morning you will have to get up very early, as you must be down at the Queen's Wharf on Sussex street not later than 7:20. We all know that our American friends get up early in the morning; it is a national habit; and on this occasion we propose to take advantage of that habit. We will spend the whole day at Rockland, which is twenty-two miles down the Ottawa river. We have an entertainment down there which may be somewhat novel to many of those present, but I think if the weather is propitious it will be very enjoyable. We will get back here in the evening, and then the ladies can have a rest because there is nothing special on hand for to-morrow evening.

On Thursday we will leave the ladies to their own resources in the forenoon, but in the afternoon they will take cars (the place of starting will be announced later on), and will be taken out to the experimental farm, where a garden party will begin at half past three. We will have some good music there. The place, as you can see by reference to your program on the last page, is a very beautiful one, and well worth seeing. Then we return to Ottawa, and at 7:30 p. m. we take the Hull electric railway cars, just east of the Russell House, for the banquet at Aylmer. Tickets for the banquet can be procured from any of the members of the local committee. The banquet will speak for itself.

On Friday we have, in the morning, the clinic at Dey's Rink. In the afternoon the reception committee of the city council will take the whole party for a trip by trolley car, showing them points of interest which they may have missed before, and finish up at The Royal Shanty. That is a peculiar combination of words, Mr President—"The Royal Shanty." The meaning will be explained to you individually by citizens of Ottawa and other friends during the next few days. It is not a palace, and it is not a hut. You will be entertained by the people at The Royal Shanty on Friday afternoon. There will be some refreshments, solid and otherwise. (Laughter.)

That will conclude our social program, and I can only say that I hope you will all enjoy it.

I promised you in Minneapolis last year that if you came here we would do our best, and all I can say is that we have done our best, and we hope that it will meet with your approval and appreciation. (Applause.)

MAYOR COOK: Mr. President, may I supplement Dr. Rutherford's remarks by one or two observations? In view of the fact that many of the papers which are to be read and discussed are of a technical character, and the ladies will not desire to hear all about epizootic encephalitis and trypanosomiasis, etc. (laughter), they will not care to remain in the room all the time. Two of our aldermen are now in the audience, Alderman Plouffe, the chairman of the light and fire committee, and Alderman Rosenthal, chairman of the reception committee. Alderman Plouffe would like to show the ladies something about our fire department. And, if you will suspend the proceedings just for a moment longer, our city clerk desires to distribute the city's souvenir while the ladies are still in the gathering.

PRESIDENT STEWART: The first thing on the program is the roll call. I will say that it has been customary recently to omit the roll call, because we secure the attendance list by cards, which are given out at the door.

The next item is the minutes of the last annual meeting. These minutes have been published and placed in the hands of the membership. What is your pleasure?

DR. LOWE: I move that the minutes be adopted as published. [Carried.]

PRESIDENT STEWART: The next item is unfinished business from the last meeting.

SECRETARY REPP: There is no unfinished business.

PRESIDENT STEWART: There being no unfinished business, we will now proceed to the report of the executive committee.

Secretary Repp then read a report of the executive committee, as follows:

REPORT OF EXECUTIVE COMMITTEE.

A special meeting of the executive committee was held at the Russell House, Ottawa, Canada, Monday evening, Aug. 31, 1903, at 8 p. m., the chairman, Dr. Tait Butler, presiding.

Members present: Drs. Tait Butler, J. F. Winchester, A. H. Baker, S. Brenton, F. Torrance, J. G. Rutherford, M. H. Reynolds, M. E. Knowles, John J. Repp, S. Stewart, and (by appointment to fill vacancies) Drs. D. E. Salmon and Wm. Dougherty.

Members absent: Drs. H. L. Ramacciotti, W. H. Dalrymple, Wm. Herbert Lowe, W. Horace Hoskins and E. M. Ranck.

It was moved and seconded that the following named persons be recommended to the association for reinstatement to active membership: Dr. Richard Ebbitt, Grand Island, Neb., and Dr. S. L. Blount, Fort Worth, Texas. Carried.

The resignation of Dr. A. G. Kern, Philadelphia, Pa., was presented for consideration. It was moved and seconded to recommend that his resignation be not accepted because he is delinquent in payment of dues. Carried.

It was moved and seconded to recommend that the resignation of the following members be accepted: Drs. W. J. Martin, Kankakee, Ill.; David S. White, Columbus, Ohio; and F. L. Kilbourne, Kelloggsville, N. Y. Carried.

It was moved and seconded that Dr. J. George Adami, Montreal, Canada, be recommended to the association for election to honorary membership. Carried.

On motion, duly made, seconded and carried, the following persons were recommended to the association for election to active membership.

Arthur G. Hopkins, B. Agr., D. V. M. (Ont. V. C., 1891; I. S. C., 1899), Vancouver, B. C. Vouchers, F. Torrance and J. G. Rutherford.

Geo. H. Glover, D. V. M. (I. S. C., 1885), Fort Collins, Colo. Voucher, S. Stewart.

John Spencer, V. S. (Ont. V. C., 1886), Blacksburg, Va. Voucher, Tait Butler.

F. D. Ketchum, M. D. C. (C. V. C., 1893), South St. Paul, Minn. Voucher, R. H. Harrison.

Henry Baker, M. R. C. V. S. (R. C. V. S., London, 1875), Walla Walla, Wash. Voucher, S. B. Nelson.

A. R. Ward, D. V. M. (N. Y. S. V. C., 1901), Berkeley, Cal. Voucher, V. A. Moore.

C. W. Fisher, D. V. M. (Ont. V. C., 1898; N. Y. S. V. C., 1901), San Mateo, Cal. Voucher, V. A. Moore.

John D. Duchene, D. V. S. (Laval University, 1887), Quebec, Can. Vouchers, J. G. Rutherford and Chas. H. Higgins.

J. A. Couture, D. V. S. (Montreal V. C., 1873), Quebec, Can. Vouchers, J. G. Rutherford and Chas. H. Higgins.

A. W. Harris, D. V. S. (Montreal V. C., 1880), Ottawa, Can. Vouchers, J. G. Rutherford and Chas. H. Higgins.

John Wilson, V. S. (Ont. V. C., 1888), Leamington, Ont. Vouchers, S. Brenton and Geo. W. Dunphy.

A. E. Moore, D. V. S. (McGill University, 1894), Ottawa, Can. Vouchers, J. G. Rutherford and Chas. H. Higgins.

Otto G. Noack, D. V. M. (Berlin, 1890), Reading, Pa. Vouchers, W. Horace Hoskins and C. J. Marshall.

R. N. Mead, D. V. M. (O. S. U., 1895), St. Paul, Minn. Vouchers, Paul Fischer and S. H. Ward.

H. D. Paxson, V. M. D. (Univ. of Pa., 1893), Fort Worth, Texas. Vouchers, M. Francis and S. L. Blount.

J. M. Douglas, V. S. (Ont. V. C., 1894), Hendrum, Minn. Vouchers, J. G. Annand and S. D. Brimhall.

J. Butters, V. S. (Ont. V. C., 1894), Renville, Minn. Vouchers, J. G. Annand and S. D. Brimhall.

E. W. Powell, V. M. D. (Univ. of Pa., 1900), Bryn Mawr, Pa. Vouchers, W. Horace Hoskins and C. J. Marshall.

S. H. Gilliland, V. M. D. (Univ. of Pa., 1901), Philadelphia, Pa. Vouchers, Leonard Pearson and C. J. Marshall.

T. S. Carlisle, V. M. D. (Univ. of Pa., 1901), Philadelphia, Pa. Vouchers, W. Horace Hoskins and C. J. Marshall.

W. J. Storm, V. M. D. (Univ. of Pa., 1897), Philadelphia, Pa. Vouchers, W. Horace Hoskins and C. J. Marshall.

W. R. Andress, V. M. D. (Univ. of Pa., 1900), Philadelphia, Pa. Vouchers, W. Horace Hoskins and C. J. Marshall.

Harry K. Copithorn, V. M. D. (Univ. of Pa., 1903), Natick, Mass. Vouchers, W. Horace Hoskins and C. J. Marshall.

B. T. Woodward, V. M. D. (Univ. of Pa., 1902), Oxford, Pa. Vouchers, W. Horace Hoskins and C. J. Marshall.

D. D. McNaughton, D. V. S. (McGill Univ., 1893), Webster, N. D. Vouchers, W. F. Crewe and J. N. Sheppard.

Thomas Falconer, V. S. (Ont. V. C., 1894), Alexandria, Minn. Vouchers, S. D. Brimhall and J. G. Annand.

It was moved and seconded to recommend that Dr. A. S. Alexander, Evanston, Ill., be permitted to withdraw his application for membership, and that the treasurer be instructed to return to Dr. Alexander his membership fee. Carried.

It was moved and seconded that it be recommended that the application of Dr. Charles Frazier, Pullman, Wash., be rejected, for the reason that the application does not show that he has attended a veterinary college for the required length of time. Carried.

On motion the committee adjourned.

JOHN J. REPP,
Secretary.

DR. HOSKINS: I move that the several recommendations in this report be taken up seriatim. [Carried.]

The several recommendations were taken up separately and adopted.

DR. LOWE: I move that the report of the executive committee be adopted as a whole. [Carried.]

PRESIDENT STEWART: A meeting of the executive committee was held this morning. The secretary will now make report.

Secretary Repp then read the report of the executive committee as follows:

REPORT OF EXECUTIVE COMMITTEE.

A special meeting of the executive committee was held at the City Hall, Ottawa, Canada, 9 a. m., Tuesday, Sept. 1, 1903, the chairman, Dr. Tait Butler, presiding.

Members present: Drs. Tait Butler, J. F. Winchester, A. H. Baker, W. Horace Hoskins, S. Brenton, F. Torrance, S. Stewart, J. G. Rutherford, M. H. Reynolds, M. E. Knowles, J. J. Repp, Wm. Herbert Lowe and (by appointment to fill vacancy) D. E. Salmon.

Members absent: Drs. H. L. Ramacciotti, W. H. Dalrymple and E. M. Ranck.

The following applicants were recommended to the association for election to active membership:

W. H. Perrigo, M. D. V. (McK. V. C., 1901), Milwaukee, Wis. Vouchers, A. E. Behnke and R. E. Cochrane.

W. H. Pethrick, V. S. (Ont. V. C., 1897), Bedeque, P. E. I. Voucher, Chas. H. Higgins.

D. Gorsuch, D. V. S. (U. S. C. V. S., 1902), Glencoe, Md. Vouchers, J. P. Turner and L. A. Nolan.

A. M. Wray, M. D. C. (C. V. C., 1900), Richmond, Ill. Vouchers, W. F. Heyde and S. Stewart.

James Graham, M. R. C. V. S. (R. C. V. S., Edinburgh, 1886), Philadelphia, Pa. Vouchers, C. J. Marshall and W. Horace Hoskins.

Chas. Winslow, V. S. (Mont. V. C., 1879), Rockland, Mass. Vouchers, W. J. Hinman and J. F. Winchester.

A. J. Tuxill, D. V. M. (N. Y. C. V. S., 1894), Auburn, N. Y. Voucher, Wm. Henry Kelly.

H. W. Boyd, D. V. S. (A. V. C., 1897), Nyack, N. Y. Voucher, Wm. Henry Kelly.

R. W. Kenning, V. S. (Ont. V. C., 1872), Pembroke, Ont. Vouchers, Chas. H. Higgins and J. G. Rutherford.

G. A. Hay, V. S. (Ont. V. C., 1895), Campbellford, Ont. Vouchers, Chas. H. Higgins and W. F. Heyde.

F. F. Brown, D. V. S. (C. V. C., 1892; K. C. V. C., 1901), Kansas City, Mo. Vouchers, Tait Butler and S. Stewart.

Geo. Waddle, V. S. (Ont. V. C., 1885), Kalamazoo, Mich. Vouchers, Tait Butler and S. Brenton.

Thos. A. Allen, V. S. (Ont. V. C., 1874), Brockville, Ont. Vouchers, Chas. H. Higgins and J. G. Rutherford.

J. T. Duncan, M. D., V. S. (Ont. V. C., 1872), Toronto, Ont. Vouchers, J. G. Rutherford and M. E. Knowles.

Fred Fisher, V. S. (Ont. V. C., 1881), Carleton Place, Ont. Vouchers, J. G. Rutherford and Chas. H. Higgins.

D. McAlpine, D. V. S. (McGill Univ., 1894), Brockville, Ont. Vouchers, Chas. H. Higgins and M. C. Baker.

A. H. Hall, D. V. S. (McGill Univ., 1894), Quebec, Can. Vouchers, Chas. H. Higgins and M. C. Baker.

W. C. McGuire, D. V. S. (McGill Univ., 1893), Cornwall, Ont. Vouchers, Chas. H. Higgins and J. G. Rutherford.

Elisha Hanshaw, D. V. S. (A. V. C., 1880), Brooklyn, N. Y. Vouchers, Roscoe R. Bell and Geo. H. Berns.

D. Fisher, V. S. (Ont. V. C., 1893), Grandin, N. D. Vouchers, W. F. Crewe and J. N. Sheppard.

C. A. Clawson, D. V. M. (O. S. U., 1900), Kansas City, Kan. Voucher, Louis A. Klein.

W. W. Boucher, V. S. (Ont. V. C., 1889), Ottawa, Can. Vouchers, J. G. Rutherford and Chas. H. Higgins.

D. McCuaig, V. S. (Ont. V. C., 1892), Moneton, N. B. Vouchers, J. G. Rutherford and Chas. H. Higgins.

B. A. Sugden, D. V. S. (McGill Univ., 1897), Montreal, Can. Voucher, Chas. H. Higgins.

J. H. Tennent, V. S. (Ont. V. C., 1874), London, Ont. Vouchers, J. G. Rutherford and Chas. H. Higgins.

C. A. Mack, V. S., M. D. V. (Ont. V. C., 1901; McK. V. C., 1902), Stillwater, Minn. Vouchers, S. D. Brimhall and J. G. Annand.

On motion the committee adjourned.

JOHN J. REPP,
Secretary.

It was moved and seconded that the report of the executive committee be adopted. Carried.

DR. TAIT BUTLER: I move that the by-laws be suspended and that the secretary be instructed to cast the ballot of the association for the election to active membership of all the applicants whose names have been read in these two reports of the executive committee. [Carried.]

PRESIDENT STEWART: The secretary will cast the ballot of the association.

SECRETARY REPP: In pursuance of your instructions, I now cast the ballot of the association for the election to active membership of those gentlemen whose names have been read in the two reports of the executive committee.

PRESIDENT STEWART: I declare them duly elected. Is the finance committee ready to report?

DR. RYDER: Both of my associates on the finance committee are absent. I would like to have some one appointed to fill the vacancies.

PRESIDENT STEWART: I will appoint Dr. Chas. H. Higgins and Dr. R. P. Lyman to fill these vacancies in the finance committee.

The next committee to report is the committee on publication.

DR. REYNOLDS: I may say that the report of the chairman is ready to be submitted to the committee for approval, but we have been unable to hold a meeting; therefore I am compelled to ask that this be delayed. We can report any time this afternoon.

PRESIDENT STEWART: The next committee to report is the committee on intelligence and education. I believe that Dr. E. B. Ackerman is chairman. The secretary tells me he has a report from Dr. Ackerman, who is absent.

SECRETARY REPP: I received yesterday from Dr. Ackerman a letter in which he states that he has not gathered enough data as yet to enable him to make a formal report. He can only report progress. He encloses a partial report by Dr. A. T. Peters, a member of the committee, which I now submit.

REPORT OF THE COMMITTEE ON INTELLIGENCE AND EDUCATION.

Aug. 17, 1903.

*Dr. E. B. Ackerman, Chairman of the Committee on Intelligence
and Education,*

MY DEAR SIR:

I herewith submit to you my report as a member of this committee.

Request has been made that each member of the American Veterinary Association be sent the following bulletins:

North Dakota Experiment Station, Bulletin No. 54, "Abortion in Cattle and White Scours in New Born Calves," by Dr. Van Es.

North Dakota Experiment Station, Bulletin No. 53, "Food Products and Their Adulterations," by Professor E. F. Ladd.

South Dakota Experiment Station, Bulletin No. 78, "Fringed Tapeworm of Sheep," by E. L. Moore.

Utah Experiment Station, Bulletin No. 77, "Experiments with Horse Feeding."

Indiana Experiment Station, Bulletin No. 94, "Sheep Diseases," by W. A. Bitting.

Storrs Experiment Station, Bulletin No. 25, "The Covered Milk Pail a Factor in Sanitary Milk Production," by W. A. Stocking, Jr.

Missouri State Board of Agriculture, Bulletin No. 11, "Foot and Mouth Disease in New England," by J. W. Connaway.

Illinois Experiment Station, Bulletin No. 84, "Dairy Conditions, and Suggestions for Their Improvement," by W. J. Fra-ser.

Arkansas Experiment Station, Bulletin No. 51, "Methods of Combating Communicable Diseases of Farm Animals," by R. R. Dinwiddie.

Arkansas Experiment Station, Bulletin No. 57, "The Relative Virulence for the Domestic Animals of Human and Bovine Tuberculosis," by R. R. Dinwiddie.

Arkansas Experiment Station, Bulletin No. 63, "The Relative Susceptibility of the Domestic Animals to the Contagia of Human and Bovine Tuberculosis."

Information was received that the report of the National Live Stock Associations may be secured by our members by addressing the secretary, C. F. Martin, Denver, Col., enclosing twenty-five cents in stamps to cover postage. These volumes are profusely illustrated, contain 500 to 600 pages each, are well bound, and give very reliable information on the subject of the live stock of the United States.

Washington Experiment Station, Bulletin No. 50, "A Preliminary Report on Glanders," by S. B. Nelson.

Nebraska Experiment Station, Bulletin No. 74, "Mange in Cattle and Horses, and Lice on Hogs," by A. T. Peters.

Nebraska Experiment Station, Bulletin No. 75, "Feeding

Experiments with Cattle and Pigs," by E. A. Burnett and H. R. Smith.

Nebraska Experiment Station, Bulletin No. 76, "Experiments with Dairy Herd," by A. L. Haecker.

Nebraska Experiment Station, Bulletin No. 77, "Poisoning of Cattle by Common Sorghum and Kaffir Corn," by A. T. Peters, H. B. Slade and Samuel Avery.

Iowa Experiment Station, Bulletin No. 58, "Parturient Paralysis, and the Schmidt Treatment," by John J. Repp.

Iowa Experiment Station, Bulletin No. 69, "The Chicken Mite," by John J. Repp.

Minnesota Experiment Station, Bulletin No. 82, "Hæmorrhagic Septicæmia," by M. H. Reynolds, will be sent to each member as soon as the new list of Active Members is completed.

The Department of Agriculture was requested to send a copy of the Experiment Station Record to each member of the association, but a letter received from Acting Director Allen states that they would be pleased to send a copy of the *Experiment Station Record* to all members of the American Association who are occupying state or municipal positions. The committee is now looking up the names of those who are holding such positions, and will forward the same to the director of the Office of Experiment Stations, and no doubt they will soon receive this valuable journal. I should like to inform the members that this journal can be secured by writing to the superintendent of documents, Union Building, Washington, D. C. The entire volume of twelve numbers can be secured for the nominal sum of one dollar per year.

A request has also been made to the superintendent of documents to send each member of the association what is known as the "Monthly List of Publications," issued by the Division of Publications, as per sample attached. This will enable the veterinarians to know what has been recently published, how it can be secured and the price of the same.

The committee further has looked up the matter of public libraries and traveling libraries.

It would be well to ascertain, during the coming year, from all the state libraries and college libraries throughout the United States, what books they contain on medical subjects, particularly veterinary science. These could then be catalogued and so

arranged by the committee that the members in the various states where the libraries are located could be notified of the literature of the profession to be found in these libraries and how such volumes may be obtained.

It would also be well for the traveling libraries to be supplied with some of our literature. Through the secretaries of the various state associations the members could then be informed what these traveling libraries possessed and how they could be obtained. In this way we could stimulate reading among the veterinarians to a great extent. The following are the states that have traveling libraries:

<i>State.</i>	<i>Name of State Library Commission.</i>
Massachusetts.....	Board of Free Public Library Commissioners.
New Hampshire.....	Board of Library Commissioners.
New York.....	Home Education Department.
Connecticut.....	Public Library Commission.
Vermont.....	Board of Library Commissioners.
Wisconsin.....	Free Library Commission.
Ohio.....	Board of Library Commissioners.
Georgia.....	State Library Commission.
Maine.....	Library Commission.
Indiana.....	Public Library Commission.
Kansas.....	Traveling Library Commission.
Colorado.....	Board of Library Commissioners.
Minnesota.....	State Public Library Commission.
Pennsylvania.....	Free Library Commission.
Michigan.....	Board of Library Commissioners.
Iowa.....	Iowa Library Commission.
Idaho.....	State Library Extension and Traveling Library Commission.
New Jersey.....	Public Library Commission.
Washington.....	State Library Commission.
Delaware.....	State Library Commission.
Nebraska.....	Public Library Commission.
Maryland.....	State Library Commission.
Maryland.....	Free Library Commission.

This shows that we have quite a few traveling libraries in the United States, although this is quite a new thing. It would be well for our committee to recommend that coöperation with the traveling libraries and these commissions be courted, and that our membership be so arranged, with the assistance of the various state secretaries, that we could readily say how many

members each state contributed to this association and how best they could be served by either the traveling libraries or these commissions.

The committee also calls attention to the work that has been begun by the library of congress in printing a series of cards for departmental libraries. They are engaged in preparing a card catalogue of the contents of scientific periodicals, and these cards are going to be printed soon. A selected list of the more important journals has been made, and these will be catalogued in order, beginning in each case with the first volume of the respective journal. Cards will be made not only for the title of each article, but for each important subdivision of the article, making the catalogue quite detailed, and enabling an intelligent classification of the cards. These cards can be furnished by the library of congress, which distributes them at the low cost of two cents for each single card and a half cent for each additional copy or duplicate. It is not necessary to purchase all of the cards unless they are desired. A careful list can be made by selecting those subjects in which one is specially interested. Any veterinarian in possession of a fairly complete card index would certainly be more resourceful, and in that way might feel that he could benefit not only himself but his community by giving exact and reliable information.

As to how best this committee could aid the individual veterinarian, it would be well to suggest to the members of the association to write the committee concerning subjects that are of present interest in their respective communities. This committee could then make up a very short editorial on the same; as, for example, the work that is now being done in immunizing cattle against tuberculosis. The Bang System, which has been carried out so successfully on the Pine Grove Stock Farm that we are going to visit during this session, could be attractively written up by the committee for the use of newspapers in localities interested in the subject.

The influence of this committee can be extended in a great many ways. The main difficulty is to have the hearty coöperation of all members of the association, so that they will discuss freely the subjects that are of vital importance.

A. T. PETERS.

PRESIDENT STEWART: Gentlemen, you have heard this partial report of the committee. What is your pleasure?

DR. LEECH: I move that it be referred to the publication committee. [Carried.]

PRESIDENT STEWART: The next report in order is that of the committee on diseases, of which Dr. Leonard Pearson is chairman. By reference to the program you will note that the report of this committee was postponed until Wednesday. We will therefore pass it. The next is the report of the committee on army legislation, of which Dr. Wm. Herbert Lowe is chairman.

Dr. Lowe then presented the following report:

REPORT OF THE COMMITTEE ON ARMY LEGISLATION.

Your committee on army legislation would report that no further attempt has been made during the past year to obtain contemplated veterinary legislation for the United States army on account of the known opposition of Secretary Root of the war department to such legislation.

Secretary Root is about to retire from the war department, and Governor Taft of the Philippine Islands will soon be at the head of this department, and it is sincerely to be hoped that the new secretary will be favorable to the proposition to give the veterinarian proper rank and to place him on a substantial footing commensurate with the valuable services he renders in the army.

In the first place, and before another step is taken, it is important that our brethren in the army should agree among themselves as to what improvement and organization of the army veterinary service is necessary and expedient. The veterinarians in the army are the men who ought to know best what is required to place the service on a proper footing.

It may be possible that the army veterinarian cannot get all he is entitled to at once. If this is the case, he should obtain what is possible now, and then he would be in a better position later to get more.

It is a question of expediency whether the proposed measure should go directly from the veterinarians in the army through military channels to the war department, or whether it should go from the army veterinarians to the committee of the American Veterinary Medical Association and from the committee to the secretary of war for his approval.

In any event, the measure should first be approved by the war department and military authorities before being introduced in congress. It is worse than useless in most instances to attempt legislation of any kind that is not acceptable to the department that it affects and concerns.

The trouble with the last bill was that the committee unfortunately did not have the approval of the secretary of war. That quickly aroused opposition which led to the defeat of the bill.

Your committee believes that a moderate bill presented to the new secretary of war might receive favorable consideration on the part of the war department, and would then have a good chance of passing congress and becoming a law; and, on the other hand, your committee is of opinion that a bill introduced in congress, however meritorious in its provisions, would meet with defeat if it did not first have the approval of the head of the war department.

Such a measure as would be approved by the war department would be embodied in the general war legislation presented by the department, and could be enacted into law without much difficulty.

Your committee would report that the legislative committee of the veterinary medical association of New Jersey was successful last winter in passing a bill through both houses of the New Jersey legislature, making the veterinarian in the cavalry troops of that state a commissioned officer, but the governor took exception on the ground that veterinarians in the United States army were not commissioned officers, and that the military organization of the state should be in conformity with the law of the federal government.

The attention of members of the profession, both in and out of the army, is called to an order of the war department. It is self-explanatory, and reads as follows:

HEADQUARTERS OF THE ARMY,
 ADJUTANT GENERAL'S OFFICE,
 WASHINGTON, Feb. 19, 1902. }

General Orders,
 No. 18.

The following has been received from the War Department:

"War Department, Washington, Feb. 19, 1902.

"The following executive order has been received from the White House and is published for the information and guidance of all concerned:

"EXECUTIVE ORDER.

"All officers and employes of the United States of every description serving in or under any of the executive departments, and whether so serving in or out of Washington, are hereby forbidden, either directly or indirectly, individually or through associations, to solicit an increase of pay, or to influence or attempt to influence in their own interest any other legislation whatever, either before congress or its committees, or in any way save through the heads of the departments in or under which they serve, on penalty of dismissal from the government service.

"THEODORE ROOSEVELT.

"WHITE HOUSE,

"January 31, 1902."

"At the same time especial attention of the officers of the army is called to the following existing provision of the Army Regulations:

"* * * * Efforts to influence legislation affecting the army, or to procure personal favor or consideration, should never be made except through regular military channels; the adoption of any other method or by other officer or enlisted man will be noted in the military record of those concerned." (Par. 5, A. R.)

ELIHU ROOT,
Secretary of War.

By Command of Lieutenant General Miles,

H. C. CORBIN, *Adjutant General,*
Major General, U. S. Army.

Last March, the *American Veterinary Review* started an "Army Veterinary Department" in its columns for the presentation of questions connected with the problem of army legislation, devoting each month five or six pages and even ten pages for the discussion by all those interested in this important branch of the government service.

Dr. Olaf Schwarzkopf, a member of this association, and a man of large experience in the army, took the initiative, and has expressed his views very fully.

While there have been very divergent opinions expressed by various army veterinarians as to rank, the advisability of the establishment of a veterinary corps, and other important matters, yet there is an evident tendency to give and take, so that they may center upon a conservative demand likely to be acceptable to military men and the war department.

Respectfully submitted,

WM. HERBERT LOWE,
Chairman.

PRESIDENT STEWART: Gentlemen, you have heard the report of the committee on army legislation. What is your pleasure?

DR. LEECH: I move it be referred to the committee on publication.

PRESIDENT STEWART: This report is now open for discussion.

DR. HOSKINS: The gentlemen ignored the recommendation of the retiring general of the army (Miles), in which he recommends that the cavalry be equipped with motor cycles and that automobiles be substituted for transports.

The motion was carried.

PRESIDENT STEWART: I would say that it has been customary to lay the discussion of these reports over, and discuss all of them at one time. The next is the report of the committee on pharmacopœia.

DR. BELL: I have just received from Dr. Ranck, the chairman, the basis for a report, and he asks that I act for him in calling the committee together and read his outlined report, and that we formulate a report and present it later.

PRESIDENT STEWART: There is no objection. The report of this committee will be deferred.

The next committee to report is on the standard of excellence and soundness, of which Dr. G. H. Berns is chairman. I wish to say for Dr. Berns that, through some misunderstanding, he did not expect to act as chairman of this committee. I hope, however, that, even at this late date, he will make a report.

DR. BERNs: Dr. Stewart has fortunately taken quite a little of the brunt off my shoulders, by offering an explanation for me. When I received a letter from Dr. Stewart, shortly after the last annual meeting, requesting me to serve on this committee as

chairman, I immediately replied, stating that I would willingly serve on the committee, but I declined to assume the responsibility of its chairmanship. I did not receive any further word from Dr. Stewart until two or three weeks ago. I therefore took it for granted that some one else had been appointed chairman, and I paid no further attention to the matter. Later I found that Dr. Stewart had written to me, and urged me to reconsider my determination, but that letter never reached my office, or, if it did, I never saw it.

DR. REYNOLDS: May I say a word in addition to the explanation of our chairman? We may be able to make a partial report at this meeting. I was talking with the chairman this morning, and I think we can make a partial report so that the work may at least be started.

PRESIDENT STEWART: If there is no objection to the deferring of a definite report, we will have it later.

DR. BERNS: Dr. Reynolds may have done more than I have, and I hope a little time will be given us to talk this matter over and report later.

PRESIDENT STEWART: If there is no objection the report will be deferred. The next committee is that on resolutions. It is customary to defer the report of the committee on resolutions until late in the session. Perhaps, however, the committee is able to make a partial or complete report.

DR. SALMON: I would say that the committee on resolutions has at this time nothing to report.

PRESIDENT STEWART: That completes the reports of committees. The next will be the report of the secretary.

Secretary Repp then read his report, as follows:

SECRETARY'S REPORT.

In conformity with the well established custom, I beg leave to submit for your consideration a report for the year just closing. The character of the work of the office enables the secretary to acquire information about the workings of the association which does not come to any other officer or member. It is upon these points that I assume the members desire to be informed. To deal with the larger problems of the profession is the function of the president rather than of the secretary; there-

fore I shall confine my remarks to those details which appear most prominently in the course of the year's work. I hope I may be pardoned if I should speak somewhat plainly in reference to certain matters and if I should be inclined to sermonize a little at times. I assure you that what I may say will be devoid of any personal allusion, and that it will be uttered only for the purpose of bringing about a better and more healthy growth of our organization. So far as the details of the work are concerned, I need say nothing, for upon this point you are already informed through the receipt of various circulars, personal letters, statements of dues, the program, etc.

Viewed with an element of optimism, it may well be said that the progress made by the association during the year just closing has been gratifying. The various committees have been diligent in the prosecution of their duties. Of those committees whose duties have been especially arduous must be mentioned the committee on publication and the local committee of arrangements. How these committees have succeeded is evidenced by the bound volume of the 1902 meeting and the excellent program of entertainment and clinical instruction which you have already seen.

After a strenuous process, which has been aptly likened to tooth pulling, enough contributions were extorted from the various members by your secretary to make the program what you see it to-day. Although I feel very grateful to those who have been generous enough to respond to my requests, and have thus relieved me of the very unenviable position of being at this time without an adequate supply for our literary feast, I cannot be extremely complimentary upon this point. It appears to me that the members should take the matter of contribution to the program under earnest consideration at an early date, even to the extent of being able to announce more than a year in advance what their production shall be for a forthcoming meeting. In this way your secretary would be relieved of much responsibility upon this point, and thus be enabled to spend more energy upon other phases of the work of his office, the members would be assured of a full program, and all would profit by having well prepared papers, rather than superficial ones, as may be the case when they are hastily prepared. I should like if the importance of this could be impressed upon the members.

An invitation to be present at the meeting and submit a contribution to the program was sent to each of the twenty living honorary members. There were received nine replies, to which reference has already been made. Two of the honorary members, namely, Dr. E. Nocard, Alfort, France, and Prof. E. Peroncito, Turin, Italy, kindly offered to send contributions. It was with deep regret to me, as it has been to you, to learn a few weeks after the receipt of the letter from Dr. Nocard that he had died. This deprives us of the benefits of his paper, as well as the incomparably larger benefits of the years of service to the profession which we had every reason to expect of him.

The various transportation organizations have been very generous in granting reduced rates to our meeting. The publication of an extended schedule of side trips has enabled those who desire to take advantage of them to select the trip which best suits them and make all arrangements for it before leaving home.

A few words must be said in reference to the delinquency of certain members in the payment of dues. Earnest and persistent efforts have been made during the past year to collect dues from those in arrears, but despite these efforts it has been necessary to report for suspension about seventy members who are in arrears beyond the limit set by the by-laws. This is a matter of much regret to the association, because it does not want to come so near to losing any of its membership. It is to be wondered why members will allow themselves to become delinquent, inasmuch as the yearly sum to be paid is so small. If a member decides to withdraw from the organization, it would be better in every way for him to pay up his dues to the time when he decides to resign his membership and then submit his resignation. This matter of arrearages is one of great importance to the association.

I feel impelled to refer to another matter. The by-laws provide for the payment of dues in advance. As soon as a member is elected his first year's dues become due. The second year's dues are payable at the opening of the second year of his membership. I believe that if the members-elect were impressed with these facts those who decline to pay in advance would take a different view of the matter and the payment of dues would be more prompt. It is hoped that there will be no delay on this

score in the future. I quote from my circular letter to the members under date of Aug. 10, 1903, as follows: "The business of the association is growing larger and more costly every year. We need every cent we can get to keep things going as we like to have them go. Our dignity as an association must be maintained, and the officers are puzzled sometimes to know how to maintain it. It is hard to do so while sailing so close to the shore all the while."

I wish to thank the members and others who throughout the year accorded to me their most earnest support in my work, and to bespeak for the association a growth and achievement during the coming year which will greatly excel any of the years of its history, of which we are all so proud.

Respectfully submitted,

JOHN J. REPP,
Secretary.

PRESIDENT STEWART: You have heard the report of the secretary. What is your pleasure?

DR. LEECH: I move that it be referred to the publication committee. [Carried.]

PRESIDENT STEWART: The next is the report of the treasurer.

Dr. Lowe presented his report as follows:

TREASURER'S REPORT.

Receipts.

1902.		
	Balance at last report.....	\$576.83
Sent. 15.—	By check from Dr. Stewart.....	1,092.37
1903.		
April 11.—	By check from Secretary Repp.....	325.00
July 11.—	By check from Secretary Repp.....	250.00
		<hr/>
		\$2,244.20

Disbursements.

1902.		
Sept. 15.—	To L. E. Kennedy, Findlay, Ohio, for 100 double postal cards and printing.....	\$3.00
Sept. 15.—	To Dr. Wm. Henry Kelly, Albany, N. Y., for 1,000 one-cent stamps during July and August	10.00

Sept. 15.—To The Lane Printing Co., Kansas City, Kan., for letter circular, application blanks, notice program, and other stationery used in and sent from the secretary's office	102.45
Sept. 15.—To Dr. S. Stewart, Kansas City, Mo., for salary as secretary for the year ending Sept. 1, 1902	300.00
Sept. 15.—For expenses of railroad joint agent, postage stamps, telegrams, expressage, printing, and membership fees returned, \$79.78	379.78
Sept. 15.—To Frank Amiraux, Paterson, N. J., for making three typewritten copies of the treasurer's annual report.....	1.50
Sept. 15.—To Dr. T. E. Smith, Jersey City, for postage as resident secretary for New Jersey	2.34
Sept. 15.—To Dr. T. E. Robinson, Westerly, R. I., for postage	2.75
Sept. 15.—To Dr. C. J. Marshall, Philadelphia, Pa., for 600 two-cent stamps.....	12.00
Sept. 15.—To Dr. B. D. Pierce, Springfield, Mass., for postage	4.00
Sept. 15.—To Dr. E. B. Ackerman, Brooklyn, N. Y., for stamps, typewriting and stationery..	3.14
Sept. 15.—To Dr. E. M. Nighbert, Kansas City, Mo., for postage stamps.....	3.50
Sept. 15.—To Dr. J. S. Butler, Minneapolis, Minn., for postage	1.80
Sept. 15.—To Dr. J. R. Mitchell, Evansville, Ind., for postage stamps	4.00
Sept. 15.—To Dr. S. B. Nelson, Pullman, Wash., for postage .....	.90
Sept. 15.—To Dr. E. M. Ranck, Glenolden, Pa., for stenographer's services and postage account, commenting on diseases.....	6.00
Sept. 15.—To Dr. Geo. R. White, Nashville, Tenn., for postage and typewriting report.....	1.50
Sept. 15.—To Dr. W. J. Hinman, Winnipeg, Man., for postage, duty and stationery.....	21.70
Sept. 15.—To Dr. F. E. Anderson, Findlay, Ohio, for postage for the year 1902.....	5.48
Sept. 15.—To Dr. Claude D. Morris, Binghamton, N. Y., dues returned.....	3.00
Sept. 15.—To Dr. W. F. Heyde, St. Louis, Mo., for stamps	5.00
Sept. 15.—To Dr. R. H. Harrison, Milwaukee, Wis., for postage	3.20

Sept. 15.—To Dr. M. H. Reynolds, St. Anthony Park, Minn., for telegrams, postage, expressage and valise for papers.....	7.60
Sept. 15.—To Dr. Williams, W. L., Ithaca, N. Y., for expenses of librarian.....	14.67
Sept. 15.—To Dr. Johnson Gibbons, Vancouver, B. C., for postage stamps.....	2.00
Sept. 15.—To Dr. Lemuel Pope, Jr., Portsmouth, N. H., for postage.....	3.90
Sept. 15.—To Dr. John W. Groves, Hamilton, Ont., for postage stamps and duty on envelopes and paper.....	5.40
Sept. 15.—To Dr. Chas. H. Higgins, Ottawa, Ont., for postage stamps and duty on circulars.....	3.63
Sept. 29.—To Dr. Wm. Herbert Lowe, Paterson, N. J., for 200 two-cent postage stamps for treasurer's office during the year ending Sept. 1, 1902.....	4.00
Sept. 29.—To Robert S. Taylor, St. Paul, Minn., for reporting the proceedings of the Minneapolis convention	142.50
Sept. 29.—To The Smith Premier Typewriter Co., corner 17th and Farnum streets, Omaha, Neb., for note books and copying cloths.....	1.70
Sept. 29.—To Hodson Bros., Ames, Iowa, for bill heads and statements.....	6.50
Sept. 29.—To The Ames Times, Ames, Iowa, for letter heads, envelopes and circular letters.....	11.00
Sept. 29.—To Dr. John J. Repp, Ames, Iowa, for postage stamps, expressage and drayage.....	8.50
Oct. 24.—To American Surety Company of New York, for premium on treasurer's bonds from Oct. 26, 1902, to Oct. 26, 1903...	10.00
Oct. 25.—To Ames Times, Ames, Iowa, for circulars and envelopes.....	5.75
Oct. 25.—To Judisch Bros., Ames, Iowa, for indexed book and three bill files.....	1.30
Oct. 25.—To William H. Hoskins Co., Philadelphia, Pa., for letter books and copying bath	9.17
Oct. 25.—To Dr. John J. Repp, Ames, Iowa, for expressage, drayage and postage stamps..	14.90
Dec. 30.—To The Ames Times, Ames, Iowa, for envelopes and letter heads.....	7.75
Dec. 30.—To W. F. Giesseman, Des Moines, Iowa, for lettering 61 certificates and engrossing three obituary resolutions.....	22.20
Dec. 30.—To Dr. James I. Gibson, Dennison, Iowa, for postage and for printing circulars..	7.00

Dec. 30.—To The Kenyon Printing & Mfg. Co., Des Moines, for 150 mailing tubes.....	3.75
Dec. 30.—To Dr. J. Repp, Ames, Iowa, for postage and expressage	6.25
1903.	
Jan. 24.—To Dr. John J. Repp, Ames, Iowa, for postage and expressage.....	38.95
Jan. 24.—To Miss Nellie Carroll, St. Anthony Park, Minn., for thirty-two hours' stenography and typewriting of proceedings A. V. M. A., at fifty cents.....	16.00
Jan. 24.—To Dr. J. C. Norton, Phoenix, Ariz., for expressage on certificates from Phoenix, Ariz., to Lincoln, Neb.....	1.00
Jan. 24.—To Dr. J. F. Winchester, Lawrence, Mass., for expressage on certificates from Lawrence to Philadelphia.....	.45
Jan. 24.—To Dr. W. Horace Hoskins, Philadelphia, Pa., for expressage on certificate from Philadelphia to Washington, D. C.....	.35
Jan. 24.—To Judisch Bros., Ames, Iowa, for secre- tary's incidentals	3.15
Jan. 24.—To M. H. Kistler, Ames, Iowa, for one letter file cabinet.....	4.50
Jan. 24.—To Hodson Bros., Ames, Iowa, for 1,750 statements	6.50
Jan. 24.—To Ames Times, Ames, Iowa, for circular letters, letter heads, envelopes, memo heads, wrapping packages for shipment.	77.55
April 25.—To The Pioneer Press Co., St. Paul, Minn., for 550 copies proceedings of the American Veterinary Medical Associa- tion, 1902	532.89
April 25.—To Dr. G. A. Johnson, Sioux City to Ames .....	.40
April 25.—To Judisch Bros., Ames, Iowa, for manila wrapping paper and ball hemp twine...	.44
April 25.—To Dr. M. H. Reynolds, St. Anthony Park, Minn., for expressage on certifi- cates from St. Anthony Park to Sioux City .....	.40
April 25.—To Dr. John J. Repp, Ames, Iowa, for postage stamps, expressage and drayage	34.49
April 25.—To The Ames Times, Ames, Iowa, for labels, letter heads, envelopes, applica- tions, blanks, circulars and wrapping paper	67.15

April 25.—To The Pioneer Press Co., St. Paul, Minn., for cash paid Adams Express Co., on shipment of Proceedings to members	60.87	
April 25.—To J. E. Campbell Printing House, Des Moines, Iowa, for 1,500 constitution and by-laws	22.25	
May 28.—To Natchez Drug Company, Natchez, Miss., for one dispensary and one pharmacopœia	10.75	
July 18.—To The Ames Times, Ames, Iowa, for circulars, letter heads and envelopes...	9.50	
July 18.—To Dr. John J. Repp, Ames, Iowa, for postage stamps, telegraph messages and other incidentals	14.80	
Aug. 24.—To Dr. John J. Repp, Ames, Iowa, in payment of expense bill of Dr. Pote, St. Louis, Mo., which he sent Secretary Repp as part payment of his dues.....	1.03	
Aug. 24.—To The Ames Times, Ames, Iowa, for 7,000 circular letters, 7,000 programs, 50 notices to resident secretaries and 50 announcements	91.50	
Aug. 24.—To Dr. John J. Repp, Ames, Iowa, for stamps, telegrams, exchange on draft and expressage as per itemized statement	43.55	
		\$1,914.68
Sept. 1, 1903, Balance on hand.....		329.52
		<hr/> \$2,244.20

Respectfully submitted,
WM. HERBERT LOWE,
Treasurer.

OTTAWA, CANADA, Sept. 1, 1903.

Examined and approved by Committee on Finance.

J. E. RYDER, *Chairman.*
RICHARD P. LYMAN,
CHAS. H. HIGGINS.

OTTAWA, CANADA, Sept. 1, 1903.

PRESIDENT STEWART: You have heard the report of the treasurer. What is your pleasure?

It was moved that it be referred to the publication committee.
Carried.

PRESIDENT STEWART: We will now take up the reports of resident state secretaries. It is customary to read by title and refer these to the publication committee where the author is not present.

STATE SECRETARIES' REPORTS.

ARIZONA AND NEW MEXICO.

J. C. NORTON, PHOENIX, ARIZ.

As resident secretary for Arizona and New Mexico, I can report but very little of general interest to the profession. There are still very few practitioners in the territories because the stock interests are almost entirely confined to the range, and therefore require little attention except along sanitary lines.

Both territories have for many years enforced stringent sanitary laws, which are under the direction of sanitary boards. Arizona has also employed a territorial veterinarian, who receives a salary. During the past year New Mexico has likewise for the first time regularly employed a territorial veterinarian.

No portion of either territory is under federal quarantine, and all classes of live stock except sheep are practically free from contagious diseases. Scabies exists to some extent among the latter in portions of each territory, but a good advance has been made during the past year towards its eradication.

Special attention has been given of late to guard against the introduction of cattle scabies. This disease has become quite prevalent in some states, and is controlled with difficulty. We should encourage systematic coöperative work by all states and territories in combating this disease before it becomes generally prevalent.

CONNECTICUT.

THOMAS BLAND, WATERBURY.

Connecticut veterinarians have been kept fairly busy during the past year treating the common acute diseases and lamenesses.

Glanders was very prevalent in Hartford and suburbs, but inquiries through other parts of the state indicate that the disease

has not been so common as in previous years. A very few cases of *rabies* were reported. *Influenza*, or catarrhal fever, forgot to visit us. *Canine distemper* has not prevailed any more than in previous years, and has been less fatal. Reports show that *tetanus* has been very uncommon. Veterinarians in this state have a very limited opportunity of determining the prevalence of *tuberculosis*, so I cannot report anything definite. Milk inspectors have been appointed, and their reports show a general good quality of milk.

The Connecticut Veterinary Medical Association is now in a very flourishing condition, and has over forty members. The meetings are semi-annual. The last meeting was held in New Haven on Tuesday, Aug. 18, 1903, and thirty-six veterinarians were in attendance. Four new members were elected.

Eleven subjects were offered at the clinic. The following operations were performed:

Ovariectomy of mare.

Ovariectomy of bitches, through the flank without anesthesia. This method was generally condemned as inhuman and cruel.

Median neurectomy on three subjects.

Ulnar neurectomy on one, and peroneal and sciatic neurectomy on two.

Castration of a colt standing.

Also a few minor operations.

It is believed that we will have a large increase in our membership at the next meeting, to be held in February, 1904, at which time we hope to frame a suitable bill to regulate the practice of veterinary medicine.

FLORIDA.

J. G. HILL, JACKSONVILLE.

Florida has made quite an important move during the last year by introducing some blooded cattle to cross upon natives, which as a rule are small, many steers not dressing more than 300 to 350 pounds. Stock raising will, however, never succeed in Florida until something is found that can be raised cheaply to feed through the winter months,—December, January and February. During these three months the range cattle exist, to be

sure, but they come out in the spring stunted and very poor, and a large per cent that are kept entirely on range food die.

Two cases of glanders are reported. These were taken care of by the board of health, as Florida has no state veterinarian. A bill for this appointment failed to pass at the last session of the state legislature.

I had an unusual case some time ago that might prove interesting at this time. A mule was brought to me afflicted with retching and with all the other symptoms of choke. I passed the probang without affording relief, diagnosed the case as "dilation of esophagus," and told the owner that I could do nothing more except to prescribe soft food. I heard from the case in about three weeks. The patient was no better, and was getting weaker, with periods of retching after eating or drinking. The owner reported two weeks later that the mule was dead, and asked if I desired to hold post mortem. I did so, and found the following lesions: The thoracic cavity contained much fetor and a large amount of pus. The pleura had adhered to the anterior portion of the cavity, and sloughed portions were hanging in shreds. The diaphragm was ruptured, and about half the stomach protruded into the thoracic cavity. Union had taken place between and borders of rupture in diaphragm, but did not entirely close the stomach.

I express my regret at not being able to be with you, and sincerely wish you a pleasant and instructive meeting.

IOWA.

HAL. C. SIMPSON, DENNISON.

I am sorry to report that applications for membership were not as plentiful as I had hoped they would be.

The place of meeting is at such a distance that only a few can attend, and while I held up as one inducement for membership the receiving of the published minutes of the meetings, the reply has been that, while the book might look nice in the practitioner's library, they can get all the papers, frequently the discussions, and all other important news in the veterinary magazines.

This brings an opportunity I have desired ever since I became a member. Should papers presented before the American Veter-

inary Medical Association be presented to the veterinary magazines for publication? I say no. The association gets up a very neat report of each meeting, nicely bound, and fit to go in any book case. The author presenting a paper before the association should do so with the understanding that it becomes the property of the association, and that it should be published only in the report of the annual meeting. This does not cheapen a paper, but enhances its value.

I am aware that this will meet with opposition, particularly from the non-members, the editors of the magazines, and from some members of the association. To offset this it would induce a number to join the association, and "in union there is strength."

The editors of the respective veterinary magazines might truthfully say that this would take away a number of the leading articles. This I concede, but it would more than be met by inducing the secretaries of state associations to send in all papers and discussions presented before their respective associations for publication. These (and a great many of them are excellent articles) are never published, because they are not sent in and because the state association is not financially able to have them printed for distribution. Those who are members of the American Veterinary Medical Association of course receive the report of the annual meetings, with all papers published in full. I believe that every member of the American Veterinary Medical Association is a subscriber to at least one of the leading veterinary magazines, and I believe that I would be safe in saying that eighty per cent are subscribers to both; so that they have plenty of opportunities to read American Veterinary Medical Association doings.

The authors of the respective papers might object, because they naturally would like to see articles written by them in the magazines. This, I concede, is a laudable ambition, and I for one respect them for it; but the honor of having their manuscript published in the report of the annual meeting of the leading veterinary association of the world ought to be compensation enough to offset all other desires.

In this state we have a state veterinary surgeon, Dr. P. O. Koto, and a number of assistants who receive five dollars per diem and expenses when actually engaged, who, upon orders from the governor, to whom all calls from local boards of health

are sent, go wherever directed. The department has been fairly busy, investigating glanders, tuberculosis and the diseases mentioned elsewhere in this report.

The department, in connection with the state board of health and the executive council, have issued rules for the prevention and restriction of contagious diseases of domestic animals, but unfortunately we do not require an examination of horses for glanders, nor a tuberculin test for breeding cattle, being brought into the state. This allows the state to be made a dumping ground for infected animals.

The division of veterinary science of Iowa State College has recently extended its prescribed course to four years of nine months each. The former curriculum has been revised and enlarged by the addition of a well graded course in stock judging and animal nutrition. Last year there were thirty-six freshmen, eight juniors and four seniors. The entrance requirements have been increased, thereby raising the standard for admission. Notwithstanding these higher requirements, I am informed by Dr. J. H. McNeal, dean of the faculty, that the prospects for the ensuing year are brighter than they have ever been.

The veterinary section of the experiment station at Ames, Dr. J. J. Repp in charge, during the past year has been investigating paralysis of the hind quarters of pigs. Considerable progress has been made along this line, and definite results will probably be announced in the near future. This disease or condition has proven very destructive in many herds. In one case eighty out of one hundred were lost, in another eighty-nine out of ninety, and in another seventy out of seventy. When it afflicts a herd it is as bad as cholera in every respect, except that it appears to lack the character of contagiousness. When it appears in a herd it, as a rule, completely demoralizes the hog-raising industry on that farm for the year.

The station expects to issue a bulletin covering investigations that have been made on the subject of external ano-vulvitis of cattle. This disease has been quite prevalent in some parts of the state, and has resulted in quite heavy losses.

The section issued a bulletin in June covering investigations in regard to the chicken mite. This is Bulletin No. 69, and may be obtained on application to the station at Ames.

From the secretary of the Iowa State Board of Veterinary

Medical Examiners I learn that there are 205 graduates registered and sixteen more took the last examination. There are 543 non-graduates registered, most of whom are past middle age, and who in a few years at most will be out of the way. The workings of our state board have been very satisfactory.

The Iowa State Veterinary Medical Association is in a very flourishing condition. There are about ninety members in good standing, and over half of them were in attendance at the last annual meeting, held at Cedar Rapids, Jan. 14 and 15, 1903. A number of very interesting papers were read, and nearly all elicited much discussion, although azoturia seemed to lead. We had a good clinic, with a number of operations, all successfully performed. A new feature of the clinic was a judging contest for local horses. This was a very valuable feature, and one which will probably be continued at our association meetings. I would recommend it to all state associations.

The literature furnished me by Secretary Repp was sent out to all graduates in the state from the roster of the state examining board. If any graduate was missed I assure him it was an oversight.

Almost without exception the veterinarians are prosperous, owning their homes. Some are engaged in business enterprises aside from their practice. Some own farms and breed thoroughbred stock, others flour mills, drug stores, rural and city telephone stock, etc. All members in the state who are engaged in practice report business so far this year twenty to fifty per cent better than for the corresponding period last year.

Practitioners report regarding diseases as follows: "There has been a great deal of *influenza* prevalent throughout the state; several report the enormous tumefaction of the eyelids as being much more severe than in any previous year. *Periodic ophthalmia* is increasing in all parts of the state. It is noticed that western horses of all ages come into the state with apparently perfect eyes, and in a short time become affected the same as our native horses. *Strangles* in some localities is of a very virulent type. *Hog cholera* and *swine plague* seem to be falling off. Only a few report isolated cases in their localities, which is good news, for of all diseases affecting domestic animals in this state these two cause the highest death rate and the greatest pecuniary loss. *Laryngitis* is reported from different sections, mostly of a mild

nature, but occasionally developing into pneumonia. *Pyemic arthritis* is also apparently on the increase. Possibly one reason why it is particularly noticed is the fact that there is much more breeding than in former years. *Enterohepatitis* of turkeys, as described by Doctors Smith and Moore, is found to exist, and the loss is very heavy; in some flocks as high as 100 per cent. The loss is not supposed by the flock owners to be due to any particular disease. They simply suppose that "turkeys are getting hard to raise," which is true in one sense. *Parasitic bronchitis* is very prevalent, particularly in the southern part of the state. It has caused the death of hundreds of cattle. The prevalence of this disease is attributed to the fact that the past season has been a very wet one. *Equisetum* poisoning is mentioned from one locality, several horses having died. Diagnosis was proven by finding the plant in limited number on low ground. *Nodular disease* in cattle was reported from one locality. An outbreak took place last spring, but not much of it prevails at present.

MASSACHUSETTS.

BENJ. D. PIERCE, SPRINGFIELD.

Massachusetts reports progress. During the past year we have succeeded in obtaining a registration law. We have been successful in controlling an outbreak of foot and mouth disease, receiving coöperation and valuable assistance from the United States Bureau of Animal Industry.

A few cases of *mange* in horses have been investigated. All cases were close to the Rhode Island border, and were traced to localities in that state. No cases are now known to exist in Massachusetts. *Glanders-farcy* is increasing, and I feel that the laws should be so altered and construed that the "cheap" traders, who are quite a feature in its spread and distribution, could be checked. *Hog cholera* has existed in a few districts. *Tuberculosis* in cattle, I believe, is decreasing, although good and effectual work could be done along the line of more care in disinfection of old and infected stables. This statement applies with equal force to *glanders-farcy* in horses.

MICHIGAN.

G. W. DUNPHY, QUINCY.

As resident state secretary I have the honor to submit the following report for the State of Michigan:

The veterinarians of the state have experienced a marked increase in business during the past year, especially those doing a country practice.

This condition is not due to any increase in the prevalence of disease, but to the increased value of the live stock and the better financial condition of the people. Contagious and infectious diseases have caused us some trouble during the past year.

A number of cases of *maladie-du-coit* appeared in a herd of horses shipped in from some of the Western States, the animals being scattered to a considerable extent before the trouble was known to the proper authorities.

Rabies among dogs has prevailed in this state to an alarming extent during the past year, not only making considerable havoc among the canine race, but destroying other valuable live stock as well. While a number of human beings have been bitten, a few of whom have died from this dreadful malady, the majority have fortunately availed themselves of the Pasteur treatment, and averted the disease.

Other contagious diseases that are usually found in our state, such as *glanders*, *tuberculosis*, *hog cholera* and *swine plague*, have given us but little trouble during the past year.

Our Michigan State Veterinary Association is steadily increasing in numbers and interest, our last meeting being one of the most successful in its history.

Efforts have been made in the past year to secure legislation for better protection of the profession, and to place the live stock sanitary regulations more directly under the control of the state veterinarian and state board of health. I regret to say that both these efforts were unsuccessful, but as important reforms are seldom accomplished by the first effort, we look hopefully forward for better results in the future.

Our state association sends greeting to the American Veterinary Medical Association, and wishes you to bear in mind that our fair city of the straits is ready to receive you with open arms at any time when, in your judgment, you see fit to honor us with your presence.

MONTANA.*

M. E. KNOWLES, HELENA, MONT.

I have but little to offer. I did not expect to be with you, and did not have time to make a written report.

The condition of affairs in Montana is about the same as during the past few years. We have a little *tuberculosis* among dairy cows, but none among range cattle. We find an occasional case of *glanders*.

Unfortunately there are not enough veterinarians in Montana to fill the positions open to them. The passage of the new milk and meat act has made positions, and we have not a veterinarian filling any of them, they being filled by human physicians.

*Verbal report.

NEW JERSEY.

T. E. SMITH, JERSEY CITY.

I am pleased to report that during the past year the veterinarians of New Jersey have accomplished more than some of us ever thought possible. The law governing the practice of veterinary medicine, passed by the legislature of 1901-1902, has proved a success, one conviction being made and the offender sent to jail for 120 days. The September term of the grand jury will bring out one or more cases for consideration. Several violators were warned, and considered it well to look for other fields.

During the legislature session of 1902-1903 a bill was introduced which would open the registration for three months. Our legislative committee were upon the ground, and able to raise such a vigorous protest that the bill was smothered in committee.

Then our brethren of the M. D. profession had a bill introduced which contained several objectionable features; again we were forced to show our strength, and were not satisfied until they inserted a clause which gives us additional protection.

We also introduced a bill which provided that veterinarians in the state militia were to receive the rank of first lieutenant. The bill passed both houses, but was held up by the governor, who refused to sign it on the ground that it was in advance of the United States Army's regulations. On the whole, our legislative committee passed a very busy winter.

The present year finds ninety-eight per cent of the practitioners enrolled in the state society. All hands seem, and are, very much in earnest.

At the annual meeting President Lowe, in his address, strongly advocated the establishment of a bureau of animal industry, under veterinary direction, to have complete control of veterinary matters. Under the present system they are controlled by different boards, composed of laymen and physicians. At the semi-annual meeting, held July 9th, at the United States quarantine station, the matter was further discussed. Since the meeting was held our worthy president was called into consultation with the state board of health and the tuberculosis commission, and was prevailed upon to accept the position of chief veterinarian of the former board and the office of chief examiner to the latter commission. This is more recognition than we have ever before received. You might ask, "Why were you so successful?" It is answered in one word, *organization!*

We have had some *glanders* in the larger cities, and an outbreak of *anthrax* in the southern part of the state. These outbreaks are now in the hands of able and intelligent workers, and we look for a speedy and complete eradication of both diseases.

NORTH DAKOTA.

W. F. CREWE, DEVILS LAKE.

I have endeavored to call the attention of the veterinarians of North Dakota to the meeting of the American Veterinary Medical Association to be held at Ottawa this year by forwarding all the letters and announcements received from Secretary Repp, as well as many personal letters, and believe our state will be represented by one or more. At any rate, there will be some new applications for membership. I was unable to get in touch with the veterinarians of South Dakota, as I could not find that a state society existed, nor could I secure the addresses of the graduates practicing there.

The veterinarians throughout this state report a very prosperous year. Although the diseases have not been of a serious nature, the increased value of stock has materially added to the practice of veterinarians in general. The fatality among horses has not been great. The prevailing disease has been *influenza* and its complications. We do not seem to have accomplished much toward eradicating *glanders*, as a great many cases have been reported this year. *Swamp fever* (so-called) does not seem to have existed to any extent on the Dakota side of the Red River Valley. Serious outbreaks of *scabies* amongst the range cattle in the western part of the state have existed, causing a great deal of loss during the past year. Radical measures, in the way of uniform dipping, are being taken, and it will no doubt soon be eradicated. *Black leg* has not been prevalent during the past year.

A call has been issued to the veterinarians of North Dakota to meet in October, for the purpose of reorganizing the state association. We are going to revive interest in this society, which was very active some years ago, and succeeded in having passed some excellent legislation regulating the practice of veterinary science in North Dakota. There are forty graduates practicing in this state, and these should form plenty of good material for a successful society. Our laws prohibit the registration of any but graduates of recognized veterinary colleges, who must pass an examination given by the state examining board.

Our state is to be congratulated on securing the services of Dr. L. Van Es to fill the chair of veterinary science in the agricultural college, as well as that of chief state veterinarian. The doctor intends introducing a system of scientific investigations that will redound with much benefit to the veterinarians and the state at large.

In connection with his regular duties, Dr. Van Es will give a special course for veterinarians, consisting of practical bacteriology and pathology. This will be taken advantage of by many of the veterinarians, as this knowledge is a great help in the diagnosis and treatment of contagious diseases.

I beg at this time to suggest the name of Dr. L. Van Es for resident state secretary of the American Veterinary Medical Association for the ensuing year. His present position will keep him in constant touch with the veterinarians, as well as the general conditions of the stock interests of our state.

OHIO.

A. S. COOLEY, CLEVELAND.

I am pleased to report that the profession in Ohio is in a prosperous condition. This is the verdict of those with whom I have been in touch. Our state association held a very good and instructive meeting, and is in a growing condition.

The Cleveland Veterinary Medical Association, the only county organization in the state, so far as I know, has been working along the lines of agitation concerning dairy conditions and improvement in the city milk supply; also, in the indictment and prosecution of quacks, having had five indictments. I hope the next state secretary may report the successful prosecution of some or all.

I am glad to report the success of Dr. White, dean of the Ohio State University, Veterinary Department, in securing an appropriation large enough to build a fine building for that department, with latest appointments. This gives the students a fine chance to prepare themselves for future demands of the veterinarian.

We have had no recent veterinary legislation in the state.

The new code plan has made new health boards and sanitary commissions, but so far I have not heard of veterinarians being appointed, although the county organization has endeavored to have the profession represented on these boards.

I learn from our state veterinarian that the following diseases have been reported:

HORSES.—*Glanders* and *influenza*, *glanders* having existed to some extent in Lorain county.

CATTLE.—*Infectious keratitis*, one small outbreak of *southern fever*, and some *tuberculosis*. I might say there has been more tuberculin testing among the dairy herds than previously, and interest along that line seems to be gradually increasing.

SHEEP.—One flock with so-called *nodular disease*. No *scab* exists in Ohio.

SWINE.—*Hog cholera*.

POULTRY.—*Roup* and *cholera*.

DOGS.—A few cases of *rabies* exist.

ONTARIO.

JOHN W. GROVES, HAMILTON.

The profession in the Province of Ontario take great pleasure in welcoming the American Veterinary Medical Association on this their first visit to Canada. We hope it will be one of the most pleasant and successful meetings in the history of the association, and that this is but an inaugural meeting in Canada that shall be followed by others, whose tendency shall ever be for the further enlightenment in all matters pertaining to veterinary science.

The use of oxygen in *milk fever*, as discovered by M. Knusel of Lucerne, is being used by some practitioners with signal success. They claim it to be as far in advance of the Schmidt treatment as the latter is in advance of former methods. The mode of using the oxygen consists in employing a small metal oxygen tank, with a measuring instrument, rubber tube, and teat syphon. The udder is cleansed the same as in Schmidt's treatment. The oxygen is injected until each quarter of the udder contains two quarts of the gas. In very bad cases the udder may be filled until it is distended to such an extent that it becomes necessary to tie the teat with tape in order to retain the gas. After this it should be well massaged.

Glanders has appeared in Ottawa to an extent warranting action by the government inspectors, whose vigilance stamped out the disease. *Hog cholera* and *swine plague* have been prevalent in southwestern Ontario, but under strict quarantine measures and the slaughtering of the diseased animals, it is well under control, and in a short time the government hopes to have it stamped out.

PENNSYLVANIA.

C. J. MARSHALL, PHILADELPHIA.

Veterinary affairs in Pennsylvania are in a most satisfactory condition. The profession is made up of hard workers, not only professionally, but wherever or in whatever seems best for our advancement or mutual benefit. Members of one great family could have interests no more in common. This fact is illus-

trated by the interest taken in our different associations. We have four well organized associations, the largest of which is the Pennsylvania State Veterinary Medical Association. This society holds two meetings each year. The annual meeting is held in Philadelphia, beginning the first Tuesday after the first Monday in March of each year, and continues two days. The semi-annual meeting convenes on the third Tuesday of September, at such a place as shall have been agreed upon at the annual meeting. This year it is to be held in Pittsburg, on September 15th. There is an effort being made at present to have the semi-annual meeting held each year in Pittsburg. Dr. E. M. Ranck is president and C. J. Marshall secretary.

In the past year the Allegheny County Veterinary Medical Association has enlarged its scope and changed its name to the Western Pennsylvania Veterinary Medical Association. It was organized with about twenty members. Dr. Charles W. Boyd, Allegheny, Pa., was chosen president and Dr. Fred. Weitzel, 100 Parkway, Allegheny, secretary. The meetings are held the first Wednesday evening of each month, at the Hotel Victoria, Sixth street, Pittsburg, Pa.

The Schuylkill Valley Veterinary Medical Association is an earnest, hard working organization, made up of about twenty members. The annual meeting is held at Pottsville, on the third Wednesday of June, and the semi-annual meeting at Reading the third Wednesday in December of each year. Dr. F. H. McCarthy of Pottsville is president and Dr. W. G. Huyett of Wernersville is secretary.

The Keystone Veterinary Medical Association meets in Philadelphia, at Broad and Filbert streets, the second Tuesday of each month. Dr. W. S. Kooker of 1116 Wallace street, Philadelphia, is the president and the secretary is C. J. Marshall. This association appointed a committee of three last winter to confer with the proper officers of the City of Philadelphia for the purpose of inaugurating a more effective city meat and milk inspection. This duty was attended to with the result that Dr. Leonard Pearson was appointed as a member of the board of health. With Dr. Edward Martin and Dr. A. C. Abbott at the head of the health department, we have reason to believe that something definite may be done in the way of meat and milk inspection that will be a credit to the city of Philadelphia.

These different associations are working for one common

cause, and that is the elevation of the profession. They are valuable tributaries to the success of our national association. We cannot commend too highly the work of the local associations, in some one of which have originated nearly all the laws that have any beneficial effect on the profession. We feel that we have a right to rejoice in the protection that is afforded by the laws that have been enacted through our efforts.

It was stated in the secretary's report last year that an effort was to be made to get a law passed requiring a re-registration of all the veterinarians in the state. This appeared to be the only way that we could free our lists of a large number who registered under the old law and had ceased to have any identity with our profession. This matter was dropped for the reason that an attempt had recently been made to reopen the registration list so a few might register who had failed to attend to this duty at the proper time. If this had been accomplished there would have been an undesirable class of men allowed to register from our own state, and quacks and impostors from other states as well as our own would have been admitted to the profession. With an uncertain legislature, and this recent attempt at legislation fresh in our minds, it was deemed advisable to let the registration list remain as it is for a time.

A few laws were passed by the last legislature through the efforts of the state live stock sanitary board. One was an act to encourage the repression of tuberculosis of cattle, and to provide for the disposition of the carcasses of meat-producing animals that are infected with tuberculosis to a degree that renders their flesh unfit for use as food. This measure makes it possible to use the meat of an animal that has a slight case of tuberculosis, if it has been properly inspected. The previous method of consigning a carcass to the tank, when the only reason for doing so was the fact that the animal had failed to pass the tuberculin test, was long recognized as wasteful and extravagant. It was not the fault of the state live stock sanitary board that this law was not enacted before. People objected to using the meat from an animal that was known to be affected with tuberculosis ever so slightly. At the same time they would use the meat from a noninspected animal that was a great deal more unwholesome, because their attention had not been called to the fact that the animal was diseased.

Another act was also passed which gives the state live stock sanitary board the power to enforce a proper quarantine of dogs during an outbreak of rabies, and prescribes what measures shall be adopted to prevent its spread.

Our profession was disappointed in the action taken by the legislature in reference to a racing bill which was presented at the last session. This bill provided for a state racing commission, which was to be appointed by the governor and made up of men interested in the improvement of horses. This commission was to be empowered to license race courses and race meetings, to the end that horse racing might be conducted honestly and free from gambling.

An appropriation of \$6,000,000 was made at the last session of the legislature for the improvement of public roads. This is to be used in all parts of the state, and apportioned out in such a manner that it will last for six years. In many portions of Pennsylvania, as in all other states, the country roads are nearly impassable during certain seasons of the year. We consider that the money thus appropriated for improving the condition of our roads will go farther in developing the agricultural portions of the commonwealth than could be procured in any other manner by the same amount of money expended. The veterinary profession was united in its support of this appropriation. Telephones are being introduced into nearly all the rural sections of the state. This convenience, with the possibility of having good country roads, opens up a large field for veterinarians. Formerly the stock raiser who lived in the back districts was so far isolated from veterinary medical attention that a sick or injured animal could not receive proper attention till it was too late. With the conveniences of telephones and good country roads it will be safer to keep and raise valuable stock in these formerly isolated country districts because medical attention can be more easily obtained.

The veterinary department of the University of Pennsylvania is still in temporary quarters. The teaching staff remains unchanged, and one of the best classes of young men was graduated at the last commencement that ever left this department. It is hoped that the necessary appropriation will soon be forthcoming to make it possible to go on with the work of constructing the necessary buildings according to the magnificent plans that are at present completed.

Diseases of a contagious nature have caused less than the customary damage or alarm in the state during the last year. A few cases of *glanders*, *rabies*, *anthrax*, *blackleg*, *hæmorrhagic septicæmia* and *forage poisoning* have appeared in different parts of the state, but have been promptly suppressed through the watchful care and prompt action of the state live stock sanitary board. Equine influenza and canine distemper have been about as prevalent as usual. An effective preventive inoculation for these two diseases would be hailed with delight.

It has been suggested that it might be wise for the American Kennel Club, or some other organization interested in the diseases of dogs, to obtain the services of a competent bacteriologist, to make a study of canine distemper, and, if possible, to discover a preventive inoculation or serum treatment that would prove effectual in combating this disease. Anthrax vaccine, blackleg vaccine and tetanus antitoxine are used extensively, and we believe effectually, throughout the state in preventing these diseases. It seems possible that some equally efficacious treatment or prevention might be discovered to combat *equine influenza* and *canine distemper*, which are so common all over our country.

Aside from diseases of a contagious nature, the veterinarian's services are becoming more appreciated in the treatment of animals suffering with diseases of a sporadic nature, such as lameness and accidents, and in making useful operations, inspections, etc. It is plainly observed that the field of a veterinarian's usefulness is constantly increasing.

The state live stock sanitary board has maintained its high standard of usefulness during the past year. Owing to the change of administration some changes were made in its membership. The merit of our state veterinarian was justly acknowledged by reappointing him to his old position. This recognition met with the universal approval of our profession, as well as those interested in breeding or handling domestic animals. This board has conducted a successful experiment during the last year in immunizing cattle against tuberculosis. The result of this experiment has been published by Doctors Pearson and Gilliland, and is familiar to most of you. The practical application of it remains to be developed. Our last legislature appropriated \$25,000 for this purpose. The work is being rapidly

organized, and a number of experiments are already started, which, when completed, will show the practicability of vaccinating cattle against tuberculosis. If they are able to bring this method of vaccination into general use, as we believe they will, it will prove one of the most important discoveries in connection with veterinary medicine that has ever occurred. We can appreciate to a certain extent the value of this work when we realize that the annual loss from tuberculosis of cattle in this state alone is over a million dollars.

Tuberculin has been used as a diagnostic agent in Pennsylvania more extensively and with better results perhaps than in any other state in the Union. The verdict in reference to the value of tuberculin by the profession, as well as the most progressive breeders and dairymen in this state, is unanimously in its favor. By its judicious use an infected herd can be freed from tuberculosis and kept practically so. We condemn its use in the hands of laymen, and realize more and more that it should be restricted to the use of scientific men, and they should be absolutely honest and painstaking. It is not sufficient to test a herd and remove the ones that react, disinfect the stables, and expect that tuberculosis is permanently exterminated. It is necessary in addition to these precautions that a retest shall be made as long as any reactions are obtained. Not more than six months to a year should pass before this is done. After an infected herd has been freed from tuberculosis according to the most approved methods known at the present time, careful observation is required that it may be kept in this condition. If a vaccine can be produced that will prevent an animal from becoming infected with this disease, the secret of managing a dairy herd with profit and pleasure will be solved.

QUEBEC.*

CHAS. H. HIGGINS, OTTAWA, ONT.

As resident state secretary of the Province of Quebec, I can only give you a résumé of conditions affecting veterinary surgeons in that province.

We have a few cases of *glanders*. This, however, is dealt with by the Dominion authorities, and is taken wholly out of the hands

*Verbal report.

of the private practitioners. *Anthrax* and *blackleg* exist to a slight extent, and vaccination is practiced in some cases at the expense of the owner. Nothing is done with *tuberculosis* aside from the work of the federal authorities in connection with export cattle.

A board of veterinary examiners has existed since 1892. The bill is very good in some of its requirements, but allows anyone to treat animals where there is no veterinary surgeon. This, I may state, was not put in at the request of the board but by other parties.

There has been a little antagonism against this association. However, this has been successfully met, with the assistance of Dr. Repp; a number of applications have been received, and I feel certain there will be no more trouble. There is in Quebec a lack of organization, although the association at present is aiming toward that end. The fees are too small, and on the whole the prospect, while appearing better than it ever has before, is not up to the standard set by other provinces, particularly that of Manitoba and by the states in the Union. Aside from this I think there is nothing to report for Quebec.

RHODE ISLAND.

THOS. E. ROBINSON, WESTERLY.

It gives me pleasure to report progress in the little State of Rhode Island. One year ago I reported the veterinary profession in a very dormant condition, but since that time a decided change for the better has manifested itself.

We have succeeded in organizing the Rhode Island Veterinary Medical Association, with about ninety per cent of the qualified practitioners enrolled as members, and although the association is only about nine months old, three very interesting and instructive meetings have been held.

During the past winter an effort was made to secure legislation. A very concise bill was drawn up and introduced in the legislature, and every effort on the part of the profession exerted to secure its passage; but the opposition proved to be stronger than was anticipated, and the bill was lost.

WEST VIRGINIA.

F. P. RUHL, FAIRMONT.

I regret to record the fact that this state has no laws restricting or regulating the practice of veterinary medicine or surgery, although at the last meeting of the legislature a second attempt was made to secure the necessary legislation. For a time it looked as though we were going to succeed, but, owing to the lack of interest, the battle was left to a few who were unable to carry the bills past the pitfalls.

During the past year several veterinarians (graduates) have located within our borders, and they have been welcomed both by the people and the members of the profession. I wish to add that there is still room for more, and, as I stated in my last report, two years ago, I will assist any veterinarian seeking a location with all the information I can regarding the localities where veterinarians are most needed. I have often been urged by stockmen and farmers to induce veterinarians to locate in particular neighborhoods. The members of the profession now within the state are all enjoying the fruits of prosperity. The quality of the stock within the state has been improved so that owners in a great number of instances send long distances to secure the services of a competent veterinarian, and are rapidly becoming acquainted with the fact that an educated veterinarian is no longer a myth.

During the past year we have had no serious outbreaks of contagious diseases, the outbreak of *rabies* reported last year having been confined to several counties. At present we have an outbreak of *glanders*, which we hope to have under control. *Blackleg* and *hog cholera* continue to make their appearance in different parts of the state, much to the detriment of the stock raisers, while in the cities and towns a mild form of *influenza* has been prevalent, which in many cases has been followed by complications that have proved fatal in a number of instances.

In bringing my report to a close, I want to state that the veterinary science course is still given at the West Virginia University, and my ambition has been to give a course that will not produce educated quacks, but on the contrary I believe that the students taking the course in every instance have a higher regard

for the profession. Quite a few have matriculated in veterinary colleges to complete their education. I have mailed to the different veterinarians throughout the state the circulars and programs and urged them to join the association and attend the annual meetings. Our state association is in a dormant condition, but I still cling to the hope that the members will some day arouse themselves, and see the necessity and value of organization.

PRESIDENT STEWART: This completes the reports of resident state secretaries. What is your further pleasure?

DR. KNOWLES: It is now one o'clock, and I move we adjourn.

Motion was seconded and carried.

TUESDAY AFTERNOON, September 1.

PRESIDENT STEWART: The first order of business is discussion of the reports which have been presented. If you do not care to discuss the reports, the next order is unfinished business.

DR. BELL: You referred to the report of the committee on pharmacopœia. We have not had a meeting. I have endeavored to see the members, but I do not believe that we can get them together. As the report we are about to make is made more to the association by the chairman than it is to the committee itself, I will ask permission to read it.

This report is by the chairman of the committee, Dr. Ranck, who is unavoidably absent.

REPORT OF COMMITTEE ON PHARMACOPOEIA.

In presenting this report I must say, as chairman, that it has been very hard to get the members of the committee to work, as my appointment has been very recent on the resignation of the previous chairman, Dr. Merrill, of Chicago. I have written the various members in reference to the work which they should like to do, and also for suggestions as to what would be the best plan to pursue in getting up a report, but they all seem to think it better to wait until the meeting and bring it before the general association for discussion.

I think this committee should have explicit instructions as to what the association would like to have. Is it the sense of this association that we need most a pharmacopœia or a dispensatory?

Certainly the former is not nearly so valuable from a reference-book standpoint, and the latter is so voluminous and would cost so much to have properly published that it would be out of the question. I should be glad to have the association act upon some of the various suggestions submitted, so that this committee will know what plans are outlined by this association. Is it advisable to have a chapter on serum therapy and vaccines? Should we have a chapter on poisonous plants? Would it be advisable to have an index of the various diseases of animals and their treatment? Would it be advisable to have prescriptions according to the different ideas of various practitioners for the numerous diseases? A great many of the proprietary remedies are on the market, and some of them are very valuable to us as practicing veterinarians, especially some of the coal tar products. It seems to me these should be mentioned, as they are especially recommended in foreign literature.

The president and secretary of this association have authorized me to purchase for this committee a United States dispensatory and a pharmacopœia. This has been done, and paid for by our treasurer. These I hold for future reference, or in case the incoming president sees fit to appoint another chairman I shall be pleased to turn them over to him.

On the whole, it looks as though we have a large and difficult task, and it will not be wise for us, as a committee or as an association, to pursue any course until it has been clearly and definitely outlined by the entire voice of the association. I therefore ask that this report be thoroughly discussed, and that the various members of this committee present will take note of the suggestions of this association, and that, furthermore, the secretary be instructed to send the details of discussions to me, if reappointed as chairman.

Respectfully submitted,

E. M. RANCK,
Chairman.

PRESIDENT STEWART: Gentlemen, you have heard this report. The questions in it are very important ones. We will proceed to the discussion.

DR. BELL: I think this committee should be assisted in some way, or else the committee should be discharged. It has been in existence for three or four years; it was proposed by a

gentleman who at this meeting tenders his resignation. I have been on this committee for about three years, but have never known what was wanted. I certainly think there is a great deal of work to be done by those who do undertake it, and if the association really wants a pharmacopœia they should instruct the committee or else disband it.

DR. HOSKINS: If I remember correctly, this committee was formed with the view of coöperating with the publishers of the United States Pharmacopœia, having certain remedies that apply particularly to veterinary practice recognized and more thoroughly treated in that work, and that the collaborators in connection with the United States Pharmacopœia should have a veterinary representation. I believe the thought at that time was that this committee should place itself in correspondence with those who have in charge the publishing of that work for this purpose, and not with a view to building up a United States Veterinary Pharmacopœia.

DR. BELL: My idea of the original motion was that there shall be prepared an appendix to the pharmacopœia—a veterinary appendix. But the more this subject is considered by the committee the more gigantic does its undertaking appear, so that it now assumes, in the mind of the chairman at least, the form of a dispensatory or a pharmacopœia. I do not think that the original conception included the appointment of a veterinarian to coöperate with the publishers of the pharmacopœia, but rather take into consideration the addition of a veterinary appendix.

PRESIDENT STEWART: If I remember correctly the facts have been stated in part by both Dr. Bell and Dr. Hoskins. It has been suggested that there were veterinary pharmacopœias in use or published in European countries, and that these might be used as a basis for a pharmacopœia, or a suitable appendix to be published in the United States Pharmacopœia. I have tried to ascertain through the chairman of the committee during the past year whether or not there were such pharmacopœias, and as I remember his replies to my letters he has not been able to ascertain that there were such.

DR. SALMON: I remember something of the debate on this question a year ago and two years ago. One of the questions which arose at that time was as to whether we needed a veterinary pharmacopœia. The practitioners in the association seemed

to reach the conclusion that we did, and seemed to think that a committee of this kind could prepare such a work, and that arrangements could be made for its publication. It seems to me that a committee appointed to consider such a question as this should at least have made a report telling whether such a publication was really needed and how much work it would take to get it together. Certainly this association as a body cannot go into the details on a question of that sort; it must be worked out by some committee. The association appointed a committee because a committee could do the work and the association could not. I do not see how the association as a body can act intelligently on this question until it has certain information before it as to the expense and the amount of work which it will take to get up such a pharmacopœia, and whether it is practical to do this or not. That is a question which a committee should look into thoroughly and report upon. I know it was decided at the association meeting, either one or two years ago, that such a publication was needed, and that it was practicable for a committee to get it up without going beyond the resources of the association. But if it means that we must get up a dispensatory, a veterinary dispensatory, or that we must go into the preparation of so large a volume as a pharmacopœia, it seems to me that it would be rather beyond our resources. But those are the very points that we desired information upon, and it seems to me that we should have a committee that is sufficiently interested in this subject to make the necessary investigations so that they will be able to enlighten us next year.

PRESIDENT STEWART: I will say, gentlemen, that when this committee was appointed two years ago, and also when reappointed a year ago, it was the understanding that it should be a permanent committee until it had accomplished its definite work. It would therefore be expected that the committee would be continued. It might be competent at this time for this body to put out some form of statement showing what it wishes this committee to do. The report of this discussion might guide the chairman of the committee, but, if some one would frame a resolution showing the purpose in mind, it would be better, and would get more directly at the matter.

DR. SALMON: Is there not someone here who is interested in this subject, and who can tell the association whether it is

possible for it to get up a pharmacopœia or not, whether the material for it is available, how much work it would take, and how large a volume it would require to cover the subject?

DR. BELL: I don't by any means wish to create the impression that I am able to supply the information that Dr. Salmon asks, but I have given this subject a good deal of disconnected thought, simply because I could not connect it. Neither do I wish to speak for the chairman.

The result of the thought that I have given to the subject is that it is impracticable, and that the present text-books upon materia medica and therapeutics cover the ground as well as we could cover it in a book such as is suggested. My personal impression is that, while I am willing to serve the association in this capacity, it will be work wasted, and that if it were consummated it would involve such an expense that we could scarcely afford it. I think the subject resolves itself into the question whether the committee should be continued or disbanded.

DR. HOSKINS: Is it not true that both the United States Dispensatory and the United States Pharmacopœia are published by certain firms, and that the compilation is done by a large number of individuals scattered over the country? These individuals are selected because of some special fitness for taking up some class of drugs or remedies. Was it not originally thought that the American Veterinary Medical Association should secure representation among those compilers, so that the work might be more valuable to the veterinarians, and that this committee was to take up this part of the work and see if representation might not be had among the compilers, that the two works might be made more useful?

DR. BELL: The United States Dispensatory is a private enterprise, as I understand it, and published by individuals as a business venture. It is not official, while the United States Pharmacopœia is official, being published by authority of a convention of physicians and druggists, which convention meets in Washington once in ten years. The first pharmacopœia of the United States appeared about 1820, and has been revised every ten years. Drugs that are incorporated in this volume, and later found to be useless and obsolete, are expunged; new drugs and preparations that have been introduced and found by competent authority to be efficient are added to it, and by that means this

book is revised every ten years. Now, whether this association would gain anything by a representation on the pharmacopœia only, which is mainly intended to classify drugs and give them a proper nomenclature and supply formulæ for the preparation and dispensation of official prescriptions, and standard preparations, is a question. I think that this would not be what we are after, and I do not see how you can get into the dispensatory.

PRESIDENT STEWART: Are there further remarks on this proposition? The committee would like to be instructed if it is possible to do this.

The next order of business is New Business. Is there any new business to come before this association?

SECRETARY REPP: As you are aware the executive committee last night recommended that Dr. J. George Adami of Montreal, Canada, be elected to honorary membership in this association. This report was adopted this morning, and that is as far as this part of the business progressed. Now I move that the by-laws be suspended, and that Dr. Adami be elected an honorary member of the association.

DR. KNOWLES: I second the motion.

PRESIDENT STEWART: It has been moved and seconded that the by-laws be suspended, and Dr. Adami be elected to honorary membership. As many as favor the suspension of the by-laws and the election of Dr. Adami will raise their right hands. As many as do not favor the motion raise their right hands. It is unanimous, and I declare Dr. Adami elected an honorary member of this association.

SECRETARY REPP: Several amendments to the by-laws have been proposed. The first one is as follows:

PROPOSED AMENDMENT.

To amend Article I, Chapter X, of the by-laws by substituting the words "the third Tuesday and following days of August," for the words "the first Tuesday and following days of September," in the second and the third lines thereof.

(Signed) M. H. REYNOLDS.

Adopting this will merely change the date of the meeting from the first Tuesday and following days of September to the third Tuesday and the following days of August, making the meeting two weeks earlier.

PRESIDENT STEWART: I will say that it is customary to refer such matters to the executive committee. This is therefore referred to the executive committee.

SECRETARY REPP: The next proposed amendment is as follows:

PROPOSED AMENDMENT.

To amend Article I, Chapter VI, of the by-laws by adding the words "during his agricultural course," immediately after the word "equivalent" in the eighteenth line thereof; and by striking out the sentence "if of a medical school a similar curriculum shall prevail" in the twenty-third and the twenty-fourth line thereof.

(Signed) JOHN J. REPP.

PRESIDENT STEWART: Gentlemen, this is also a proposition to change the organic law, and it is referred to the executive committee.

SECRETARY REPP: The other proposed amendment is as follows:

PROPOSED AMENDMENT.

To amend Article II, Chapter V, of the by-laws to read as follows: The committee on intelligence and education shall collect and distribute to the members of this association, upon request, literature calculated to develop public interest in veterinary sanitary work and veterinary legislation, municipal, state and national, in so far as seems proper to the committee and the funds appropriated will allow; and report recent veterinary facts and intelligence.

(Signed) S. STEWART,
W. HORACE HOSKINS.
TAIT BUTLER.

PRESIDENT STEWART: This is also a proposal to change the by-laws. It will take the same course as the others, and be referred to the executive committee.

SECRETARY REPP: I have a number of communications which, with your permission, I shall read. They are from the following: Mrs. R. S. Huidekoper, Philadelphia, Pa.; Dr. J. Desmond, Adelaide, South Australia; Dr. J. W. Groves, Hamilton, Ontario; Dr. A. O. Cawley, Milton, Pa.; Dr. W. H. Dallymple, Baton Rouge, La.; Dr. Theobald Smith, Boston, Mass.; Dr. William H. Welch, Baltimore, Md.; Dr. E. Nocard, Alfort, France; Dr. J. H. Raymond, Brooklyn, N. Y.; Dr. Herman M.

Biggs, New York; Dr. A. Liautard, New York; Dr. Duncan McEachran, Montreal, Can.; Dr. J. McFaydean, London, England; Dr. R. H. Harrison, St. Paul, Minn.; Dr. Leonard Pearson, Philadelphia, Pa.; Dr. W. H. Wray, London, England; Prof. E. Perroncito, Turin, Italy.

PRESIDENT STEWART: Gentlemen, you have heard these communications. What shall we do with them?

DR. LOWE: I move that they be placed on file. [Carried.]

PRESIDENT STEWART: Has any member further business to bring before the association? If not, the next order of business is the election of officers. I will appoint as tellers for this election Dr. R. P. Lyman and Dr. C. J. Marshall.

DR. RUTHERFORD: I understand that nominations are now in order, and I have very much pleasure in nominating for the office of president Dr. M. E. Knowles, of Helena, Mont.

DR. WINCHESTER: I am very much pleased that Dr. Knowles has been placed in nomination by certainly the most active man in this foreign land. I am very pleased to note also that such a warhorse was the first man nominated at this session. As you well know, he has been a constant attendant at these meetings for years; he has contributed every year to the literary part of our meeting; he comes farther than any other man that attends this meeting, with, perhaps, the exception of now and then one from Honolulu or the Philippines. He is a man that has been tried and found not wanting. He is a conservative man,—so much so that he has mesmerized the entire state of Montana until that state to-day has legislation second to none in the union in favor of the veterinary profession. You have seen fit to elect him as vice-president now for several years, and that would certainly place him in line. You have seen him nominated from this floor for president and have permitted him to withdraw his name in favor of a man who had been in line and worked faithfully for the success of this association. A time has come when sectionalism should cease to exist. I think coming across the border has done away with that, and it has made an annexation of the north, east, west and south of both countries. It gives me great pleasure to second the nomination of Dr. Knowles as president for the ensuing year.

DR. TORRANCE: Dr. Knowles is so well known to the members of this association that it requires no further eulogy, but I

would like to express my appreciation of the work he has already done for this association, and to express my opinion that he would grace the office of president, and that his genial quality of good fellowship would enable him to fill acceptably such office. I take pleasure in seconding the nomination.

DR. BUTLER: I wish to place in nomination a gentleman with whom you are all well acquainted, and therefore I will not take time in attempting any eulogy. I wish to nominate Dr. R. R. Bell to the office of president of this association.

DR. PIERCE: I take pleasure in seconding the nomination of Dr. Bell. We all know him.

DR. BAKER: Allow me to add a word in favor of the nomination of Dr. Bell. It has been said that he is a gentleman who does not require any introduction. We all know his goodness, his ability, his friendliness, and he will fill the chair fully as well as any other member of this association. Without casting any reflection by inference on our northwestern member, I think that Dr. Bell deserves the election to the office of president.

DR. LOWE: I would like to second the nomination of Dr. Bell. I think it is hardly necessary to tell of his great work for the profession and this association, because every one of us knows what he has done.

PRESIDENT STEWART: Are there any other nominations? There being no further nominations, the tellers will collect the ballots. I hope it is understood that those who were elected members this morning are entitled to vote at this time. You will understand that there are two nominees for president, Dr. M. E. Knowles and Dr. R. R. Bell.

PRESIDENT STEWART: You will please come to order. The tellers have counted the ballots, and report that Dr. Bell has received 36 and Dr. Knowles 19. Dr. R. R. Bell, having received a majority of the votes cast, I declare him elected.

The next offices to be filled by election are those of the five vice presidents. The custom is to vote for all five at one time. If more than five are nominated, write the names of five only on your ballots. The one receiving the largest number of votes is declared the first vice president, and so on down in order.

DR. LOWE: I would like to nominate Dr. J. G. Rutherford for vice president.

DR. HOSKINS: I would like to put in nomination Dr. C. J. Marshall of Philadelphia.

DR. LOWE: I would like to nominate Dr. M. H. Reynolds for vice president.

DR. LEECH: I would like to nominate Dr. M. E. Knowles for vice president.

DR. BAKER: I would like to nominate Dr. E. L. Quitman.

DR. REYNOLDS: I think, perhaps, if Dr. Lowe had noticed that I am vice president he would have selected another. I ask that my name be withdrawn. Minnesota has had a vice presidency two years in succession.

DR. HINMAN: I nominate Dr. W. H. Lowe for vice president.

DR. BELL: I nominate Dr. J. E. Ryder of New York for vice president.

DR. REYNOLDS: I nominate Dr. W. A. Heck of Iowa for vice president.

DR. HOSKINS: I would like to offer the name of Dr. W. H. Dalrymple as representing a part of our country not represented by any of the nominees.

PRESIDENT STEWART: The list as we have it now is as follows: Drs. Rutherford, Marshall, Reynolds, Knowles, Quitman, Lowe, Ryder, Heck and Dalrymple.

DR. LOWE: I beg to withdraw my name as a candidate for vice president. Gentlemen, please bear in mind that I am not one of the nominees.

PRESIDENT STEWART: You can vote for five or one, or just as many as you choose. The man receiving the largest number of votes will be declared first vice president.

President Stewart then called Vice President Knowles to the chair.

VICE PRESIDENT KNOWLES: I declare the ballot closed. Gentlemen, please come to order. The secretary will announce the result of the vote for vice president.

SECRETARY REPP: The vote for vice president is as follows: Dr. M. E. Knowles 42, Dr. J. G. Rutherford 40, Dr. W. H. Dalrymple 36, Dr. C. J. Marshall 28, Dr. J. E. Ryder 25. These are the five having the highest number of votes.

VICE PRESIDENT KNOWLES: I declare them duly elected. Nominations for secretary are now in order.

DR. LOWE: I would like to place in nomination the man who has served us so well during the last year, Dr. John J. Repp,

and I think that is all that is necessary. I move that the by-laws be suspended and that he be elected by acclamation. [Carried.]

VICE PRESIDENT KNOWLES: Nominations for treasurer are in order.

It was moved, seconded and carried that the by-laws be suspended and that the present incumbent, Dr. Wm. Herbert Lowe, be elected treasurer by acclamation. [Carried.]

PRESIDENT STEWART: This closes the election of officers. Dr. Knowles has consented to present a paper which he has with him, and in doing so will make that part of Thursday's program so much shorter. The local committee of arrangements is anticipating that we will through early, and if we can advance our program somewhat it will aid in that way.

Dr. Knowles has gone for his paper, and in the meantime Dr. Reynolds will present the report of the publication committee.

REPORT OF THE PUBLICATION COMMITTEE.

Invitations for bids on reporting were sent to five prominent medical association reporters. The most satisfactory responses were submitted to the members of the publication committee, and by unanimous vote Mr. Robert S. Taylor, who reported the meting last year, was awarded the contract. The following is a copy of the invitation for bids. The specifications were modified somewhat, as will be noted by a comparison with our report for 1902:

PUBLICATION COMMITTEE, AMERICAN VETERINARY MEDICAL ASSOCIATION,

M. H. REYNOLDS, CHAIRMAN.

ST. ANTHONY PARK, MINN., July 13, 1903.

DEAR SIR: You are requested to submit a bid on the stenographic and typewriting work for the annual meeting of the American Veterinary Medical Association, to be held at Ottawa, Canada, Sept. 1 to 4, 1903.

The contractor is required to make good and complete stenographic report of all proceedings and discussions, including executive committee meetings, and to transcribe the same in legible typewriting, the proceedings of each day to be typewritten, and handed, with one carbon copy, to the committee not later than 9 a. m. of the following day.

The transcribing must be so done that each executive committee report and the discussion of each paper and committee report shall begin and end on a special page.

It is estimated that the report will occupy about 260 pages of 250 words each.

You are requested to base your bids upon:

1. Per diem charges for three days' stenographic reporting.
2. Transcribing the shorthand report to typewriting at a fixed price per typewritten page (original and one carbon copy), a solid page to consist of 250 words.

The committee reserves option to strike out any part of stenographic report prior to typewriting.

The terms will be cash upon delivery of the work in good order and at stipulated time. Address bids at your earliest convenience to the undersigned.

Very respectfully.

M. H. REYNOLDS.

The following is a summary of Mr. Taylor's bid:

I shall be pleased to do the work at the following prices:

Per diem, two reporters, twenty dollars.

For transcript of all proceedings which we may be required to put in typewriting, two copies as per specifications, per page, fifty cents.

All expenses to be paid by myself.

(Signed) ROBT. S. TAYLOR.

Last year we had the assistance of two expert reporters and an expert typewriter, the latter alternating in the convention room. Mr. Taylor did the reporting for us last year, and his work was very satisfactory, copy being delivered promptly before nine o'clock of the following morning, according to specifications, something which has rarely been done in the history of the association.

Invitations for bids on printing were sent to two of the best equipped firms in the Twin Cities: the Pioneer Press Company and the Webb Publishing Company. These two firms were selected because for several years invitations have been extended to a number of other firms, and these two have always given the closest bids, and both firms have given good satisfaction in printing for us, one in 1901 and the other in 1902.

THE PUBLICATION COMMITTEE OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

M. H. REYNOLDS, CHAIRMAN.

ST. ANTHONY PARK, MINN., July 13, 1903.

GENTLEMEN: You are invited to submit bids for printing, binding, wrapping, addressing and mailing the report of the American Veterinary Medical Association, to be held in Ottawa, Canada, Sept. 1 to 4, 1903.

Bids are invited under the following conditions:

1. The committee will deliver to the successful bidder the report, properly arranged and edited and legibly typewritten.

2. The contractor shall print true to copy, without submitting proof for correction, except by special request of the chairman of this committee. In special cases of tabular or other intricate matter, proof may be sent to the author. The author shall then be allowed two days for corrections, in addition to the time consumed in transit.

3. The material and workmanship shall be uniform with the report for 1902, a copy of which is submitted as a part of the negotiation.

4. The contractor shall print, bind, wrap in printed wrappers like that submitted on sample copy, and shall legibly address and mail or express the same according to the mailing list furnished by the committee, and shall thereafter deliver any remaining copies, wrapped, to the librarian of the association within sixty days after typewritten copy has been delivered to the successful bidder.

5. The estimated size of the volume is 400 pages, and bids are to be based upon an estimated issue of 550 copies, with rates for additional pages and copies at the option of the committee. Quote price per page for variation in size of volume.

6. Bids to be submitted for the entire work, to be delivered within sixty days, as per paragraph four (4).

Bids should be addressed to the undersigned as early as practicable.

Very respectfully,

M. H. REYNOLDS.

The following is a summary of the Pioneer Press Company's bid:

We are pleased to quote you on printing the 1903 proceedings of the association, 550 pages, same style as last year, same paper as last year and same proportion of long primer, brevier and tabular matter, \$554.25.

Each page more or less, \$1.25.

Each insert printed on 80-pound enamel book, \$1.85; you to furnish the cuts, or we to make them for you.

The above quotation includes the wrappers, wrapping and addressing, and shipping under your instruction.

All alterations from copy sixty cents per hour.

Copies of the bids were sent to the publication committee, and the Pioneer Press Company was given the contract, their bid being somewhat lower.

We wish to call attention to certain points in connection with the work of publication. Last year the committee was unable to secure copies of two papers that were prepared for the Minneapolis meeting. We have had similar experiences at other meetings, and have decided to take the position that all papers for publication must be in the hands of the committee before the close of the meeting; that no papers may be taken home for correction or alteration without special arrangements being made with the committee.

Concerning the submitting of proof to authors, our position is the same as last year: that we cannot distribute proof except in case of very intricate tabular matter of very technical scientific matters with which no member of the committee is sufficiently familiar. This implies that the manuscript should be submitted in typewritten form, carefully edited. The author should be certain as to the accuracy of his proper names, library references, dates, figures, amounts and technical terms. The committee will undertake to publish true to copy.

FINANCIAL STATEMENT FOR 1902.

550 copies were issued, cost for printing.....	\$532.89
Postage and express for distribution.....	60.87
Office help preparing manuscript, etc.....	24.00
Total cost 550 volumes.....	\$617.76
Cost per volume for publication.....	\$1.12
Miscellaneous expenses of the committee.....	
Total cost for reporting the meeting.....	\$142.50

Arrangement of contents for 1903 report will be about the same as for the last report.

Readers have doubtless noticed in the last report a list of presidents and secretaries of the association; also a complete list of meeting places and dates, from the first organization of the association. We thought this such valuable historical matter that it should be put thus in a permanent and easily consulted form. The association is indebted mainly to Dr. R. R. Bell for these lists.

A careful reading of our constitution and by-laws discloses a number of articles and sections which are ambiguous, and even ungrammatical. Some important clauses are capable of two very different interpretations. Your committee does not feel authorized to vary the wording even for grammatical accuracy. We therefore submit the following:

Resolved, That a committee of three be appointed to prepare a revision of our constitution and by-laws, and submit the same at the next regular meeting of the association.

After careful consideration, we have decided to recommend a change in our plan of reporting and offer the following:

Resolved, That the publication committee be authorized to employ and recognize as such an official reporter, subject to the approval of the executive committee.

(Signed) M. H. REYNOLDS, *Chairman*.
C. J. MARSHALL,
RICHARD P. LYMAN.
ROSCOE R. BELL.

DR. REYNOLDS: I move the adoption of the report.

Motion seconded.

DR. HOSKINS: They make several recommendations in the report that ought to be taken up and considered. If you adopt that report, then the recommendations go with it. I think the voice of the association should be heard upon the several recommendations that they have made. We have had some experience in revising the by-laws of this association, and it has occupied a great many years' work.

DR. REYNOLDS: I may say that my purpose in offering the motion to adopt was to bring the report before the association for discussion and adoption. The adoption of the report adopts those resolutions.

PRESIDENT STEWART: The question is on the adoption of the report. Are there any remarks?

DR. HOSKINS: Before voting upon that resolution I would like to ask Dr. Reynolds a question. He says in the report that it costs \$1.12 for each copy of the proceedings. I would like to ask through you, Mr. President, how many members are in good standing?

PRESIDENT STEWART: I refer you to the secretary. How many members in good standing have we, Dr. Repp?

SECRETARY REPP: About 450.

DR. HOSKINS: Then it actually costs about \$1.25 to \$1.30 of the dues in the actual cost of printing. Am I correct?

DR. REYNOLDS: Yes.

DR. HOSKINS: It costs in the neighborhood of another dollar to complete the work preparatory to printing, does it?

DR. REYNOLDS: The sum first mentioned covers the entire cost of publication and distribution.

DR. HOSKINS: What I was getting at is just this: We have heard a report to-day of the treasurer to the effect that the income of this association is practically used up now. We are not increasing our membership rapidly enough to provide an income large enough to go into any additional work; and the reduction of the annual dues from five dollars to three dollars makes me think that we must very soon curtail our work or face a deficit in the treasury, and that, in any proposed consideration of revision of the by-laws, it would be well to consider going back to the five dollars dues instead of maintaining the present rate, three dollars.

PRESIDENT STEWART: If there is no further discussion, those in favor of adopting the report and referring it to the committee on publication will signify by the word aye. Contrary no. [Carried.] Dr. Knowles has consented to offer a paper at this time, and we will be pleased to have him do so. His subject is "Meat and Milk Inspection in Montana."

Dr. Knowles then read his paper. See Papers and Discussions.

DR. LEECH: I move that we adjourn. [Carried.]

ROCKLAND, ONT., Sept. 2, 1903.

The meeting was convened at 1 p. m. by President Stewart at Pine Grove Stock Farm.

The Hon. W. C. Edwards was the first speaker introduced.

HON. W. C. EDWARDS: My friend, Senator Perley, tells me not to read a long paper. Well, you know there are two departments of politics in the Canadian house of commons, and possibly also in the senate, and my friend Perley belongs

to the long-winded class, the conservative portion of the community, who make tremendously long speeches. Their position is such a bad one that they always have to make long speeches in order to make some defense of themselves. But of course it is not necessary for me to say much. The Liberal party to which I belong are not long talkers; they act.

Senator Edwards then presented a paper on "The Bang System for the Eradication of Tuberculosis in Cattle." See Papers and Discussions.

PRESIDENT STEWART: The subject of tuberculosis is seemingly an inexhaustible one. Particularly is there interest at the present time in the relation existing between bovine tuberculosis and human tuberculosis. Dr. Salmon is with us today to present some features of this subject, and I now have the pleasure of calling upon him.

Dr. D. E. Salmon then presented a paper on "Bovine and Human Tuberculosis." See Papers and Discussions.

PRESIDENT STEWART: We have with us yet two more papers, one a short one by Dr. Repp, and I will call upon him to present his paper.

DR. REPP: This paper, which is very short, should be accompanied by some lantern slide demonstrations, but as this is impossible here, I shall take the liberty to-night, when we have a stereopticon in the city hall, for the purpose of demonstrating some other papers, to run through about one-half dozen slides. Five of these slides were made from photomicrographs and one from a camera lucida drawing. They are intended to illustrate only the numbers of tubercle bacilli which occur in these sections. I have to show slides that were prepared from the liver, the pericardium, the lung, the mediastinal lymphatic glands, and several other organs, therefore I shall apply myself here to the simple reading of the paper.

Dr. Repp presented a paper on "A Microscopic Study of a Case of Tuberculosis in a Cow with Reference to Distribution of Bacilli." See Papers and Discussions.

PRESIDENT STEWART: Gentlemen, Dr. Repp has said to me that he did not anticipate that there would be debate upon this paper at this time. He hopes you are interested in this subject, and when the slides are presented he will be glad to have the discussion. We have one more paper which we ought to hear at this time.

The next paper on our program is by Drs. V. A. Moore and Archibald R. Ward on "Avian Tuberculosis." I will call upon Dr. Moore.

Dr. Moore than read the paper. See Papers and Discussions.

PRESIDENT STEWART: The time is hurrying along, and it will be advisable to postpone the discussion on this paper until evening. I hope you will all bear in mind that, in addition to the subject to be presented by Dr. Dougherty, which is especially mentioned in our program, there will be a discussion of two papers and their illustration by lantern slides this evening at the city hall.

I now turn this meeting over to our host, the Hon. Senator Edwards, who wishes to introduce some of the prominent citizens.

SENATOR EDWARDS: Gentlemen, we have with us to-day two senators and two members of the house of commons. We have only a few opportunities to meet our friends from the south, and I am sure they will be glad to say a few words. I think Senator Perley is the senior senator present, and we will call upon him first. Is Senator Perley absent? If Senator Perley is not present, I will call upon Senator Owens, the next senior senator.

SENATOR OWENS: I can assure you I did not come here to speak. I came to meet these eminent gentlemen whom Senator Edwards has so kindly invited to this place. We have come here to learn rather than to impart knowledge. But I can assure you, gentlemen, that to-day has been a most interesting and instructive one. Any one who has known our friend Senator Edwards in the past knows that he has always been ready to devote his time and his money to the interests of the public and of the public good. But I look upon his action to-day as being, I might say, the crowning act of his life. Senator Edwards has certainly been most happy in conceiving the idea of surrounding this festive board to-day with the eminent gentlemen whom we have met here, of having taken advantage of this occasion when so many eminent medical men and veterinarians are in this country to bring them together here at Rockland, and also in extending invitation to other gentlemen. I know several stock breeders who received

invitations from Senator Edwards to come here to meet you to-day. Unfortunately they could not be present. It is their loss that they are not here.

The papers throughout have been instructive. If I may refer to one in particular, it is the paper by Dr. Salmon. I am sure that every gentleman present here to-day will feel that any doubts upon the subject of tuberculosis have been removed; that is, any doubts that existed as far as its being communicated from the human to the lower animal, and vice versa. I am pleased that our minister of agriculture is here to-day, and I trust that he will now see the advisability of having tuberculin prepared under the supervision of the gentlemen who compose his staff. Our breeders in this country have had some doubts as to the purity of the tuberculin furnished.

Now, if tuberculin is manufactured under the direct supervision of our officials in the department of agriculture, it will remove that doubt.

I will not delay you longer than to say I am sure you will all agree with me concerning the great treat that has been afforded us here to-day by Senator Edwards, and that too much cannot be said in praise of his plans and the manner in which he has carried them out. Senator Edwards has carried this out as he does everything else,—on a large scale. If farmers throughout the country were to come here and see the improvements that Senator Edwards has made and his methods of farming, they would go away with new ideas about farming.

Gentlemen, I thank you for the honor you do me in calling upon me.

Senator Edwards then called for Senator Baker.

SENATOR BAKER: I am certainly very grateful to you for giving me an opportunity to say a word upon this occasion, but I do not propose to express my gratitude in the form of a speech. At this stage of the day's proceedings it would be inexcusable to detain you. For my part I am exceedingly happy to be present. I have been edified and instructed by the interesting papers that have been read before you, and I am exceedingly pleased and proud to have made the personal acquaintance of some of the gentlemen of whom I have often heard. I have upon my right hand and upon my left men

whose fame has not been confined to the limits of the country to which they belong. I have heard of Dr. Salmon and I have heard of Professor Law for many years, and have known, by report, of the splendid work they were doing in the cause of science and humanity. I say that it has been a pleasure to me to have made their personal acquaintance this day, and I hope it will not be the last time that I shall have the pleasure of meeting you.

I have known our chairman for years. I was his colleague in the house of commons, and we are now colleagues in the senate of Canada. I have seen him on parade, I have seen him at work, and I know the successes he has won, but I never had the pleasure of visiting him until last week. He persuaded me to come down and spend a night with him, and I saw for the first time the place where Senator Edwards has achieved his triumphs in stock raising. It has been a pleasure for me to come here to-day, and to meet you gentlemen, and to participate in the exercises of the day. I hope that you of the United States will all carry back to the country from which you come favorable impressions of Canada. I am sure that you will take back pleasant recollections of the hospitality which has been offered to you to-day. This hospitality has not been one iota in excess of what was deserved by the eminence which many of you have attained in the profession to which you belong, and it has not been equal to the importance of the mission in which you are engaged.

I thank you, Mr. Chairman, for giving me the opportunity of being present to-day.

Senator King was next called for.

SENATOR KING: I do not think I would have felt disposed to respond to the call of Senator Edwards if I had not been somewhat afraid that you might go away with the impression that one of the qualifications for a Canadian senator is to be thoroughly posted in this question of tuberculosis. Now, I admit that I know nothing about it; and yet I do know enough to appreciate that it is a work of vast importance, and that the work in which you are engaged is one which is to benefit not only the United States but Canada as well.

We, the senators of Canada, have other work to engage our attention. We are engaged in a work for which you peo-

ple from the United States have been setting us a pattern. We are trying to excel you as far as we are able, but we are willing to copy as well. There is plenty of room in Canada; we need more good citizens, and I am inclined to take the liberty of extending to our friends from the other side of the border, and I think I speak the sentiment of all here present, an invitation to come over and dwell with us whenever they find they have not elbow room over there.

I have to thank Senator Edwards for the kindness he has extended to us on this occasion, and I have to thank the members of this association for the pleasure we have had in meeting them.

Senator Edwards then called on Senator Legris.

SENATOR LEGRIS: The Senator knows that I am a Frenchman, and not familiar enough with the English language to address this meeting. However, I will try to make you understand that I wish to re-echo the expressions of my colleagues in the senate, Senators Owens and Baker. I must congratulate you, Mr. President, upon your fine organization. I do not belong to your noble profession, but I have been much interested in your program, and I will always remember having seen you at work, working for the farming community. And let me tell you how happy we are to have in our senate a man like Senator Edwards. You have seen him to-day, you have known him to-day, and I have nothing to add to the impression you have had from him. The reception given to your association is certainly worthy of him. We are proud of him as a Canadian, and as a man belonging to our farming community, as I do myself. I hope that every member of your noble profession here to-day will always remember the happy reception given you by my friend Senator Edwards. I thank you very much.

SENATOR EDWARDS: I will now call upon Mr. Robinson, member of parliament.

MR. ROBINSON, M. P.: Well, gentlemen, your boat goes at 4:15. Therefore, I have an hour and a half to speak. (Laughter.) I must congratulate you, Senator Edwards—[SENATOR EDWARDS: Congratulate the other fellows; never mind me.]—and the fine army of people who are here,—men whom we all ought to know, for most of them are Canadians.

But, sir, that is not the point. I have been a delegate to the United States from the farmers' organization of Canada on many different occasions, and I was always received with open arms, and given as warm a reception as you have had to-day. So that I think we are only paying back what has been given to us on former occasions. But that is not the point. You Americans will remember that in this country we do not elect our senators. "Oh," you say, "that is a sure reason why Edwards is a senator, because he never could have been elected." (Laughter.) No, sir; he wouldn't go around amongst people soliciting their votes, and consequently he would not be elected. We appoint the best men in our country to be senators, and that is the reason why we have Edwards for our senator. (Applause.) When I learned last summer that Senator Edwards was appointed to the senate you don't know how bad I felt, because Senator Edwards and I kept up the free trade end of politics in the house of commons. And now I am all alone. (Laughter.) I don't mean to say I am all alone, but there is no other Senator Edwards. And now he has gone to that bourne from which no pilgrim ever returns; he has gone to the senate; he has gone to the long roll of grannies! You see the kind of grannies they are! (Laughter and applause.)

Senator Edwards is about the age and about the size of our King of England; he is not King Edward; none of us believe that; but we know he is Edwards, king of the Ottawa valley. (Laughter and applause.) He is the farmer king of the Ottawa valley.

Now, sir, I think I have spoken my hour and a half, and had better quit.

SENATOR EDWARDS: There are no more senators or members of the Canadian parliament present, but the Rev. Dr. Moore is here. He is the secretary of the Canadian Association for the Prevention of Tuberculosis, and I think perhaps he would like to say a few words.

DR. MOORE: I cannot pretend for one moment to entertain you as the other gentlemen have done. I can only say that it is a very great pleasure to me, and I esteem it a very high honor, that even for one day you have permitted me to wear the badge of the association and have made me an hon-

orary member. We have all been singing the praises of Senator Edwards. I have to confess I saw him in a new character to-day. I knew him as a grave and reverend senator, and I new him also as an energetic member of the house of commons, but I didn't know that he could dance and lead the van as he did this forenoon. (Laughter.) I think that it is an example to the younger men that it is possible, in a genial, kindly, generous and upright way, to unite the two functions,—that of severe and energetic labor and that of kindly, generous amusement. We don't have too much of the latter; perhaps we have not enough of the former.

I am extremely pleased to be here to-day, and especially to have listened to the exceedingly valuable paper presented by Dr. Salmon. Since I became secretary of the association the question has been again and again asked of me, Is it possible that animals can be infected from consumptive human beings, or human beings be infected from consumptive animals? In view of the statements of Dr. Koch, which seemed to be sustained by a number of other gentlemen, I found myself completely nonplussed. My own feeling was strongly in sympathy with Dr. McFadyean, but being a layman I could not express an opinion. I am rejoiced to be sustained—more than sustained, strengthened and instructed—by the paper that was read this afternoon by Dr. Salmon. I shall not say more than this, except that I wish that paper could be spread by the hundreds of thousands all over Canada. I am sure it would prove a means of most effective education on this important subject.

I thank you for your courtesy.

SENATOR EDWARDS: I understand there is a gentleman here, Dr. Hoskins, who has something to say, and we will now have the pleasure of hearing from him.

DR. HOSKINS: It has been my priceless privilege for twenty consecutive years to attend the sessions of this association, first the United States Veterinary Association, and now the American Veterinary Medical Association; and I can say with pride and pleasure that, of all those twenty consecutive years, this has been the most memorable occasion in the history of this organization. To you, Senator Edwards, whose guests we are, it can be truly said that the largest number of

veterinarians, the largest army of workers in the field of comparative medicine, has met under your hospitable roof. And while we stand to-day under the two emblems that represent the two greatest nations of the world, and proud of the wonderful victories they have gained in war, the greatest victories, the truest and best, are those that are gained in times of peace. During those times we add to the health, the happiness, and the prosperity of the greatest nations the world has ever known; and thus contribute to that which is best for the whole world in the creation and strengthening of what is best for all, the true fellowship of man.

DR. KNOWLES: There have been so many kind things said about our host, that I feel all my thunder has been stolen. I could not say anything in addition. I never have enjoyed such hospitality myself, and I don't think that this association could leave this afternoon without tendering to Senator Edwards a hearty vote of thanks.

Seconded.

PRESIDENT STEWART: It has been moved and seconded that we tender Senator Edwards a hearty vote of thanks. All in favor will manifest it by rising.

All the members of the association arose; there was applause, and the audience then sang "For He's a Jolly Good Fellow," followed by three cheers and a tiger for Senator Edwards.

SENATOR EDWARDS: I appreciate in the highest terms the vote of thanks which you have offered me, and so cordially offered. On my part I desire to say that the favor is all the other way. I consider it a high compliment of your association that, coming to Canada to hold its annual convention, it has been pleased to visit our stock farm. We never had such an assemblage here before, and I am glad indeed that you have paid us the compliment and the honor of visiting our stock farm.

My one wish is that you shall long go on in your noble profession, working side by side and hand in hand with the medical profession,—the noblest of professions, so far as humanity itself is concerned. I ask you to go on in your endeavors, and reach the highest success possible in your profession.

There is also one little expression that I desire to make

with regard to our two countries. We are working for the same purpose,—the benefit of mankind and the advancement in every respect of humanity. The United States and Great Britain (the latter our mother country) are the greatest countries, as has been well said, so far as working out the destiny and the best interests of mankind are concerned, on this earth. These gatherings are such that they contribute to good fellowship and good understanding between us. I hope they will increase. I am glad to see our American friends here to-day. I hope that on occasions our Canadian friends will visit the United States as you have visited us. And if we do work under two systems of government, you under that of a republic and we under that of a limited monarchy, there is one thing that we can do; we can be the very best of friends, and I sincerely hope that the two great nations will always remain, as has been the growing condition for the last few years, if not allies, at least so that the best understanding shall exist between them for the common good of the world. (Applause.)

I return to you my heartiest and best thanks for the compliment that you have to-day paid the Pine Grove Stock Farm. (Applause.)

Now, let us sing one verse of "God Save the King," and one verse of your own national anthem, "America."

All joined vigorously in the singing of these songs, and then departed to take the boat back to the city of Ottawa.

WEDNESDAY EVENING, Sept. 2, 1903.

A session of the association was called at 9 p. m. in the city hall.

PRESIDENT STEWART: The special assignment for this evening is the presentation of a plan for the formation of an insurance or indemnity organization for the benefit of veterinarians. Dr. Dougherty will present the matter at this time.

DR. DOUGHERTY: There has been discussion for quite a while as to advisability of establishing a mutual aid or insurance society for the benefit of members of this association. Last year Dr. Liautard strongly urged me to make an effort to establish such an organization. He has written me several

times, and I have thought considerably over the matter. I have had some pamphlets published and a set of by-laws, which you can adopt or amend or discard as you see fit. I have prepared a paper which Dr. Knowles has kindly consented to read for me.

The paper prepared by Dr. Dougherty on this subject was then read by Dr. Knowles. See Papers and Discussions.

PRESIDENT STEWART: We will now call for the paper of Dr. Fish, entitled "The Effect of Certain Drugs upon Blood Pressure and Cardiac Inhibition in the Horse." See Papers and Discussions.

Drs. Repp and Moore then presented lantern slides illustrating their papers on certain phases of tuberculosis.

On account of the lateness of the hour, the discussion of these slides and the papers which they illustrated was postponed until the morning session.

The meeting then adjourned until 9:30 the following morning.

THURSDAY MORNING, Sept. 3, 1903.

PRESIDENT STEWART: The first thing on our program is a report of the executive committee, but this is now in preparation, and we will pass it for a short time.

DR. KNOWLES: I move that Senator Edwards' paper be referred to the committee on resolutions for appropriate consideration. I think we all realize the importance of that paper to the veterinary sanitarian, and I am quite sure that all the members of the association will agree with me in this.

DR. LOWE: I would heartily second Dr. Knowles' motion.
[Carried unanimously.]

DR. KNOWLES: I would like to move that the secretary of this association be instructed to give that paper as wide publicity as is possible. I would like to see it published in all the agricultural papers of the United States and Canada, and I should like particularly to have the *Breeders' Gazette* requested to publish this paper. I move you, sir, that he be so instructed.

Motion seconded by Dr. Lowe.

DR. REYNOLDS: I desire to ask Dr. Knowles if it would not be better to have that done through the chairman of the committee on intelligence and education? Is not this the legitimate function of that committee?

DR. KNOWLES: I think that is a very appropriate correction, and I will modify my motion, with your consent, to so read.

PRESIDENT STEWART: It is moved and seconded that the committee on intelligence be instructed to see to it that the paper of Senator Edwards be given the widest possible publication, and that the *Breeders' Gazette* of Chicago be especially requested to publish it. [Carried.]

The next thing now in order is the continuance of the discussion of the two papers which were postponed from last night. Thinking possibly that there may be a question or two that some of the members would like to propound with reference to those papers, you will now be given opportunity for their discussion. See Papers and Discussions for discussion on papers presented by Drs. Repp and Moore.

Dr. A. S. Wheeler of Biltmore, N. C., then presented a paper on "Experiments with the Stomach Worm in Sheep." See Papers and Discussions.

Prof. E. Perroncito was next called upon. He was not present, but had sent his paper to the secretary. See Papers and Discussions.

The next paper on the program was by Dr. Charles H. Higgins.

DR. HIGGINS: I have an apology to offer, as I have not given this paper the preparation that I wished. I asked the president if he could not excuse me, but he has caught me on one of my trips in, and there is no way out of it.

Dr. Higgins then presented his paper. See Papers and Discussions.

PRESIDENT STEWART: I do not wish to unnecessarily shorten this discussion, but the Hon. Sidney Fisher is with us now, and I will call for him. (See Papers and Discussions.)

PRESIDENT STEWART: The address we have heard is certainly most encouraging to veterinarians. I feel that we owe words of thanks to the honorable secretary of agriculture for

these most pleasant and courteous remarks. I will be pleased to entertain a motion.

DR. KELLY: I move you that a vote of thanks be extended to the Hon. Mr. Fisher for his address.

Motion seconded and carried unanimously.

MR. FISHER: I do not wish to detain you longer. I can only say that I appreciate your kindness in passing this vote of thanks; but the thanks are rather due from me to you, not only for your presence here but for the opportunity I have had of forming many delightful acquaintances and of meeting so many distinguished men.

PRESIDENT STEWART: Gentlemen, the hour for adjournment has almost arrived. The ladies and the gentlemen who have made up this convention would be very glad indeed if they could take home with them a picture to which they could refer, and point out to their friends those whom they have here met. A photographer has signified his willingness to make such a picture; he is now waiting for you in front of the parliament buildings.

If there be no further urgent business, we will adjourn until half-past two.

THURSDAY AFTERNOON, Sept. 3, 1903.

PRESIDENT STEWART: We will now take up the subject of the last paper on the program, "Malignant Tumors," by Dr. D. King Smith of Toronto. (See Papers and Discussions.)

PRESIDENT STEWART: We will next have the report of the Executive Committee.

Secretary Repp then read the report of the executive committee as follows:

REPORT OF EXECUTIVE COMMITTEE.

A special meeting of the executive committee was held at the Russell House, Ottawa, Tuesday, Sept. 1, 1903, at 10 p. m., the chairman, Dr. Tait Butler, presiding.

Members Present: Drs. Tait Butler, John J. Repp, Wm. Herbert Lowe, J. F. Winchester, W. Horace Hoskins, Wm. Dougherty, S. Stewart, M. H. Reynolds, A. H. Baker, S. Brenton, J. G. Rutherford.

It was moved, seconded and carried that the following applicants be recommended to the association for election to active membership:

R. D. Scurfield, M. D. V. (McK. V. C., 1901), Crystal City, Man. Vouchers: W. J. Hinman and J. G. Rutherford.

Geo. S. Fuller, M. D. V. (Harvard Univ., 1894), Lawrence, Mass. Voucher: Lemuel Pope, Jr.

John V. Newton, V. S. (Ont. V. C., 1878), Toledo, O. Voucher: E. H. Shepard.

M. M. Leach, V. S. (Ont. V. C., 1889), Lexington, Ky. Voucher: D. A. Piatt.

J. W. Rollings, V. S. (Ont. V. C., 1891), Lexington, Ky. Voucher: D. A. Piatt.

J. Desmond, B. V. S. (Melbourne V. C., 1887), Adelaide, South Australia. Vouchers: S. Stewart and R. H. Harrison.

F. H. Schneider, D. V. S. (National V. C., 1896), Philadelphia, Pa. Vouchers: C. J. Marshall and W. Horace Hoskins.

R. Kerr, V. S. (C. V. S., 1894), Kaukauna, Wis. Voucher: A. H. Baker.

J. F. Quinn, V. S. (Ont. V. C., 1883), Brampton, Ont. Vouchers: W. J. Hinman and J. G. Rutherford.

E. P. Althouse, V. M. D. (Univ. of Pa., 1903), Hagersville, Pa. Vouchers: W. Horace Hoskins and C. J. Marshall.

It was moved and seconded that the following proposed amendments be recommended to the association for adoption. Carried.

PROPOSED AMENDMENT.

To amend article I, chapter X, of the by-laws by substituting the words "The third Tuesday and following days of August," for the words "The first Tuesday and following days of September," in the second and the third lines thereof. (Signed) M. H. REYNOLDS.

PROPOSED AMENDMENT.

To amend article I, chapter VI, of the by-laws by adding the words "during his agricultural course," immediately after the word "equivalent" in the eighteenth line thereof and by striking out the sentence "If of a medical school a similar curriculum shall prevail" in the twenty-third and the twenty-fourth line thereof.

(Signed) JOHN J. REPP.

PROPOSED AMENDMENT.

To amend article II, chapter V, of the by-laws to read as follows: The committee on intelligence and education shall collect and distribute to the members of the association, upon request, literature calculated to

develop public interest in veterinary sanitary work and veterinary legislation, municipal, state and national, in so far as seems proper to the committee, and the funds appropriated will allow; and report recent veterinary facts and intelligence.

(Signed) S. STEWART,
W. HORACE HOSKINS,
TAIT BUTLER.

On motion the committee adjourned.

JOHN J. REPP,
Secretary.

It was moved, seconded and carried that the recommendations of the executive committee be taken up for consideration seriatim.

DR. WINCHESTER: I move that the by-laws be suspended and that the secretary be instructed to cast the ballot of the association for the election to active membership of those whose names have been read. [Carried.]

SECRETARY REPP: In accordance with the instructions of this association I now cast the ballot of the association for election to active membership of those whose names have been read.

PRESIDENT STEWART: I declare them duly elected.

The other recommendations of the report were then separately read and adopted.

It was moved and seconded that the report be adopted as a whole. Carried.

PRESIDENT STEWART: The secretary has another report of the executive committee.

Secretary Repp then read report of the executive committee as follows:

REPORT OF EXECUTIVE COMMITTEE.

A special meeting of the executive committee was held at the City Hall, Ottawa, Canada, 9 a. m., Thursday, Sept. 3, 1903, the chairman, Dr. Tait Butler, presiding.

Members Present: Drs. Tait Butler, John J. Repp, M. H. Reynolds, M. E. Knowles, J. F. Winchester, A. H. Baker, W. Horace Hoskins, Wm. Herbert Lowe, S. Stewart, S. Brenton.

It was moved and seconded that the following applicants be recommended to the association for election to active membership:

C. Heath Sweetapple, V. S. (Ont. V. C., 1896), Toronto, Ont. Vouchers: S. Stewart and Tait Butler.

Jno. F. Burnett, V. S. (Ont. V. C., 1880), Fort Macleod, N. W. T. Vouchers: M. E. Knowles and J. F. Winchester.

Chas. A. McKim, M. D. C. (C. V. C., 1899), Norfolk, Neb. Vouchers: S. Stewart.

William Stubbs, V. S. (Ont. V. C., 1868), Caledon, Ont. Voucher: Chas. H. Higgins.

J. A. Lefebvre, D. V. S. (Laval Univ., 1894), Victoriaville, P. Q. Vouchers: Chas. H. Higgins and A. A. Etienne.

Albert Dauth, D. V. S. (Laval Univ., 1889), Coteau du Lac, P. Q. Vouchers: Chas. H. Higgins and A. A. Etienne.

C. E. Derome, D. V. S. (Laval Univ., 1903), Crysler, Ont. Vouchers: Chas. H. Higgins and A. A. Etienne.

It was moved, seconded and carried that it be recommended that the following delinquents be suspended from membership on account of arrears in dues.

F. T. Eisenman, Louisville, Ky.; John McBirney, Boise, Idaho; M. H. Manley, Dayton, Ohio; F. S. Schoenleber, Chicago, Ill.

It was moved, seconded and carried that it be recommended that the following of those who are in arrears on account of dues be held over for another year:

Dr. W. T. Monsarrat, Honolulu, H. I.; Dr. John P. O'Leary, Buffalo, N. Y.; Dr. W. H. Pendry, Brooklyn, N. Y.

It was moved and seconded that it be recommended that the dues of Dr. S. E. Weber, Strasburg, Pa., be remitted until he is able to pay. Carried.

It was moved and seconded that it be recommended that the remainder of those in arrears in dues be suspended from membership on account of arrears in dues, providing they do not make remittance sufficient to cover the delinquency within thirty days after the adjournment of this meeting. Carried.

On motion the committee adjourned.

JOHN J. REPP,
Secretary.

PRESIDENT STEWART: Gentlemen, you have heard the reading of the report in its entirety. We will now have the several items.

It was moved that the by-laws be suspended and the secretary be instructed to cast the ballot of the association for the election to active membership of those whose names have been read. Carried.

SECRETARY REPP: In accordance with your instructions, I now cast the ballot of the association for election to active membership of those whose names have just been read.

PRESIDENT STEWART: I declare them elected active members.

The other recommendations in the report were separately read and adopted.

On motion the report was then adopted as a whole.

DR. LOWE: I move that the by-laws be suspended and that Dr. J. Desmond of Adelaide, Australia, be elected to membership, the secretary casting the ballot of the association. [Carried.]

SECRETARY REPP: In accordance with your instructions, I now cast the ballot of the association for Dr. J. Desmond to active membership in this association.

PRESIDENT STEWART: And I declare him elected. We have here some applications for membership which have been received since the meeting of the executive committee, and it has seemed wise to consider them in committee of the whole. They have the endorsement of reputable members, and I believe most of them have the endorsement of a majority of the executive committee. In addition to that, we have the application of Dr. Sawyer, which was not read with the rest. He was recommended by the executive committee, but I think his name was omitted in the reading.

SECRETARY REPP: I have here the following applications:

Dale E. Sawyer, D. V. S. (K. C. V. C., 1903), Howard, Kan. Vouchers: S. Stewart and Tait Butler.

J. Black, V. S. (Ont. V. C., 1894), Richmond, Mich. Voucher: S. Brenton.

It was moved and seconded that the by-laws be suspended and the secretary instructed to cast the ballot of the associa-

tion for the election of Drs. Sawyer and Black to active membership. Carried.

SECRETARY REPP: In accordance with your instructions, I now cast the ballot of the association for the election to active membership of Dr. Dale E. Sawyer and Dr. J. Black.

PRESIDENT STEWART: I declare them elected to membership.

DR. WINCHESTER: I move that the association recommend that the executive committee select St. Louis as the place of holding the next annual convention of this association. [Carried.]

Secretary Repp then read the report of the librarian as follows:

REPORT OF LIBRARIAN.

I beg to submit the following report as librarian for the closing association year:

	1891-2.	1893.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	Total.
No. of copies on hand at last report	22	41	32	56	2	8	13	23	42	239
No. of copies distributed.....	14	15	12	11	2	7	11	12	12	96
Missing		1	..	..	..	..	..	..	..	1
Remaining on hand.....	8	25	20	45	..	1	2	11	30	142

Respectfully submitted,

W. L. WILLIAMS,
Librarian.

It was moved and seconded that the librarian's report be accepted and referred to the publication committee. Carried.

SECRETARY REPP: I have here a communication from Dr. W. L. Williams, librarian, in which Dr. Williams submits his resignation from the office of librarian.

It was moved, seconded and carried that this resignation be not accepted, and that Dr. Williams be requested to continue to serve as librarian.

PRESIDENT STEWART: We will next hear the report of the finance committee.

REPORT OF THE COMMITTEE ON FINANCE.

OTTAWA, Sept. 1, 1903.

The committee on finance have carefully examined the accounts of the treasurer for the year ending Sept. 1, 1903, and find them correct, and in accord with the treasurer's report.

Balance Sept. 1, 1902.....	\$576.83
Receipts for the year ending Sept. 1, 1903.....	1,667.37
Total	\$2,244.20

We have examined and approved bills paid during the year to the amount of \$1,914.68, leaving a balance now with the treasurer of \$329.52.

J. E. RYDER, *Chairman*.
 RICHARD P. LYMAN,
 CHAS. H. HIGGINS.

PRESIDENT STEWART: Gentlemen, you have heard the report of the finance committee. What is your pleasure?

DR. BELL: I move that the report be accepted and placed on file with the publication committee. [Carried.]

PRESIDENT STEWART: We have one other committee to report, and that is the committee on the standard of excellence and soundness.

DR. BERNS: I reported yesterday that unfortunately, through some misunderstanding, the chairman, or the assumed chairman, had done nothing, but that one member of the committee, Dr. Reynolds, has accomplished something, and will make a partial report.

Dr. Reynolds then read his report as follows:

REPORT OF COMMITTEE ON STANDARD OF EXCELLENCE AND SOUNDNESS.

Owing to a misunderstanding concerning the work of this committee it so happened that there was great danger that no report whatever would be made, and that the year's time would be lost in a line which this association had thought worthy of development. For this reason we make a partial report, cov-

ering certain phases of our work. We hope to get the movement started, and therefore offer something to serve at least as a basis for discussion, something which might remain before the membership for consideration during the coming year. The standards which we offer are similar to those now in use in the agricultural college of the University of Minnesota, and for these much credit is due to Prof. John Craig, formerly professor of animal husbandry in the Iowa state college.

It seems to us that we should have standards for carriage horses, for saddle horses, and perhaps other classes. As the work of this committee is further developed, we should have an official standard of soundness, and it is hoped that something of this kind may be presented at the next meeting of the association.

During the interval every member who is interested in this plan can consider what has been offered in this partial report, and be prepared to suggest improvements. It is generally conceded that veterinarians should take more prominent part in live-stock judging work, and in order to do this we must first familiarize ourselves with the work, and be prepared to show fitness as we have opportunity.

SCORE CARD.

DRAFT HORSES.

SCALE OF POINTS FOR GELDING.

1. Age.

GENERAL APPEARANCE.

	Perfect Score.
2. <i>Height</i>	2
3. <i>Weight</i> , over 1,500 pounds. Score according to age.....	4
4. <i>Form</i> , broad, massive, proportioned.....	4
5. <i>Quality</i> , bone clean, fine, yet indicating sufficient substance; tendons lean; skin and hair fine.....	4
6. <i>Temperament</i> , energetic, good disposition.....	4

HEAD AND NECK.

7. <i>Head</i> , lean, medium size.....	1
8. <i>Muzzle</i> fine; nostrils large; lips thin, even.....	1

SCORE CARD—Continued.

	Perfect Score.
9. <i>Eyes</i> , full, bright, clear, large.....	1
10. <i>Forehead</i> , broad and full.....	1
11. <i>Ears</i> , medium size, well carried.....	1
12. <i>Neck</i> , muscled, crest high; throat latch, fine; windpipe, large....	1

FORE QUARTERS.

13. <i>Shoulders</i> , moderately sloping, smooth, snug.....	2
14. <i>Arm</i> , short, thrown forward.....	1
15. <i>Forearm</i> , heavily muscled, short, wide.....	2
16. <i>Knees</i> , wide, clean-cut, straight, deep, strongly supported.....	2
17. <i>Cannons</i> , short, wide; tendons, large and set back.....	2
18. <i>Fetlocks</i> , wide, straight, strong.....	1
19. <i>Pastern</i> , sloping, medium length, strong.....	3
20. <i>Feet</i> , large, even size, straight; horn dense; sole concave; bars strong; frog large, elastic; heels wide, high and even.....	6
21. <i>Legs</i> . Viewed in front, a perpendicular line from the point of the shoulder should fall upon the center of the knee, cannon, pastern and foot. From the side a perpendicular line, dropping from the center of the elbow joint, should fall upon the center of the knee and pastern joints and back of hoof.....	4

BODY.

22. <i>Chest</i> , deep, wide, low, large girth.....	2
23. <i>Ribs</i> , long, sprung, close.....	2
24. <i>Back</i> , straight, short, broad.....	2
25. <i>Loin</i> , wide, short, thick, straight.....	2
26. <i>Underline</i> , flank low.....	1

HIND QUARTERS.

27. <i>Hips</i> , smooth, wide.....	2
28. <i>Croup</i> , long, wide, muscular.....	2
29. <i>Tail</i> , attached high, well carried.....	1
30. <i>Thighs</i> , muscular.....	2
31. <i>Quarters</i> , deep, heavily muscled.....	2
32. <i>Gaskins</i> , or lower thighs, wide muscled.....	2
33. <i>Hocks</i> , clean-cut, wide, straight.....	8
34. <i>Cannons</i> , short, wide; sinews, large and set back.....	2
35. <i>Fetlocks</i> , wide, straight, strong.....	1
36. <i>Pasterns</i> , medium length, sloping, strong.....	2
37. <i>Feet</i> , large, even size, straight; horn dense; sole concave; bars strong; frog large, elastic; heels wide, high, one-half length of toe.....	6
38. <i>Legs</i> . Viewed from behind, a perpendicular line from the point of the buttock should fall upon the center of the hock, cannon pastern and foot. From the side a perpendicular line from the hip joint should fall upon the center of the foot and divide the gaskin in the middle. A perpendicular line from the point of the buttock should run parallel with the line of the cannon....	4

SCORE CARD—Continued.

	ACTION.	Perfect Score.
39.	<i>Walk</i> , smooth, quick; stride long, balanced.....	6
40.	<i>Trot</i> , free, straight, regular.....	4
Total		100

ROADSTERS.

SCALE OF POINTS FOR GELDING.

I. Age.	GENERAL APPEARANCE.	Perfect Score.
2.	<i>Weight</i> , 1,000-1,200.....	3
3.	<i>Height</i> , 15½ to 16½ hands.....	4
4.	<i>Form</i> , symmetrical, smooth, stylish.....	5
5.	<i>Quality</i> . Bone clean, fine, yet indicating sufficient substance; tendons defined; hair and skin fine.....	3
6.	<i>Temperament</i> , active; disposition good.....	3
HEAD AND NECK.		
7.	<i>Head</i> , lean, straight.....	1
8.	<i>Muzzle</i> fine; nostrils large; lips thin, even.....	1
9.	<i>Eyes</i> , full, bright, clear, large.....	1
10.	<i>Forehead</i> , broad, full.....	1
11.	<i>Ears</i> , medium size, pointed, well carried, not too far apart.....	1
12.	<i>Neck</i> , muscled; crest high; throat latch fine; windpipe large and clean	1
FORE QUARTERS.		
13.	<i>Shoulders</i> , long, smooth, with muscle, oblique, extending into back, and muscled at withers.....	2
14.	<i>Arms</i> , short, thrown forward.....	1
15.	<i>Forearms</i> , muscled, long, wide.....	2
16.	<i>Knees</i> , clean, wide, straight, deep, strongly supported.....	2
17.	<i>Cannons</i> , short, lean; tendon large and set back.....	2
18.	<i>Fellocks</i> , wide, straight.....	1
19.	<i>Pasterns</i> , medium length, strong; angle with ground 45 degrees..	3
20.	<i>Feet</i> , medium, even size, straight; horn dense; frog large, elastic; bars strong; sole concave; heel wide, high and even.....	4
21.	<i>Legs</i> . Viewed in front, a perpendicular line from the point of the shoulder should fall upon the center of the knee, cannon, pastern and foot. From the side a perpendicular line drop- ping from the center of the elbow joint should fall upon the center of the knee and pastern joints, and back of hoof.....	4

SCORE CARD—Continued.

BODY.		Perfect Score.
22.	<i>Withers</i> , muscled, and well finished at the top.....	1
23.	<i>Chest</i> , deep, wide, low, large girth.....	2
24.	<i>Ribs</i> , long, sprung, close.....	2
25.	<i>Back</i> , straight, short, broad, muscled.....	2
26.	<i>Loin</i> , wide, short, thick.....	2
27.	<i>Underline</i> , long; flank let down.....	1
HIND QUARTERS.		
28.	<i>Hips</i> , smooth, wide, level.....	2
29.	<i>Croup</i> , long, wide, muscular.....	2
30.	<i>Tail</i> , attached high, well carried.....	1
31.	<i>Thighs</i> , long, muscular.....	2
32.	<i>Quarters</i> , heavily muscled, deep.....	2
33.	<i>Gaskins</i> , or lower thighs, long, wide, muscled.....	2
34.	<i>Hocks</i> , clean, wide, medium angle.....	4
35.	<i>Cannons</i> , short, wide; tendons large, set back.....	2
36.	<i>Fetlocks</i> , wide, strong.....	1
37.	<i>Pasterns</i> , sloping, strong, medium length.....	2
38.	<i>Feet</i> , medium, even size, straight; horn dense; frog large, elastic; bars strong; sole concave; heel wide, high.....	3
39.	<i>Legs</i> . Viewed from behind, a perpendicular line from the point of the buttock should fall upon the center of the hock, cannon, pastern and foot. From the side a perpendicular line from the hip joint should fall upon the center of the foot and divide the gaskin in the middle. A perpendicular line from the point of the buttock should run parallel with the line of the cannon.....	4
ACTION.		
40.	<i>Walk</i> , elastic, quick, graceful.....	3
41.	<i>Trot</i> , rapid, straight, regular, high.....	15
Total		100

M. H. REYNOLDS.

DR. REYNOLDS: I think perhaps I may say for the chairman and the entire committee that we will be very grateful for any suggestions or any criticisms that you may offer to the committee. If you are inclined to criticize or suggest, do so.

PRESIDENT STEWART: What is your pleasure, gentlemen?

DR. BELL: I move that the report be referred to the publication committee.

PRESIDENT STEWART: I suspect that if the members are like me, they would want to read that over and then come back next year and criticise. The secretary has some papers to refer to the publication committee.

SECRETARY REPP: I have papers from the following: Prof. E. Perroncito of Turin, Italy; Dr. J. Desmond of Adelaide, South Australia; Dr. G. E. Nesom, Clemson College, S. C.; Dr. H. P. Johnson, Helena, Mont. I move that these papers be accepted and referred to the publication committee. [Carried.]

PRESIDENT STEWART: Dr. Rutherford has some announcements to make before giving his address on the subject of "Glanders."

DR. RUTHERFORD: I think that I have nearly worn out my hearty welcome here this afternoon. We have a little entertainment at the experimental farm, which will be very much pleasanter than listening to any dry and desultory remarks which I may make on such an unsavory subject as glanders. Before taking that matter up I have a letter I would like to read to you.

Dr. Rutherford then read a letter of invitation to this association for them to attend the exhibition at Toronto. This letter was from the manager and secretary.

DR. RUTHERFORD: I may say that I have not said anything about this until to-day because I feared that some weak or weary brother might leave Ottawa and run away to Toronto. This letter, however, came on the 28th of August. I wrote Mr. Orr, secretary and manager, and told him that I would let him know about how many of the members were going to the exhibition. I think it rather likely that any member who will retain his badge and will mention this invitation will be able to save his admission money at the gate, but beyond that I do not think that the association need take any further action in regard to the invitation, because it has already been acknowledged, unless it is seen fit to pass a motion, or a vote of thanks, or something of that kind.

I have also to announce that the Dominion Rifle Association, which is holding its annual meeting, has sent a most cordial invitation to attend the "At Home," which is going on at the rifle range this afternoon. Of course, we cannot go

to that. We are going, if we go any place, to our own "At Home" at the experimental farm, but I think a formal acknowledgment will not be out of place.

Dr. Rutherford then gave an extemporaneous address on "Glanders." See Papers and Discussions.

DR. LOWE: I notice that we have with us, in the back of the room, the dean of the Ontario Veterinary College, Professor Smith. I move that a committee be appointed to escort the distinguished professor to the platform so that he may address us. [Carried.]

VICE PRESIDENT KNOWLES: I will appoint Dr. James L. Robertson, Dr. Wm. Herbert Lowe and Dr. Charles E. Cotton to escort Dr. Smith to the platform.

DR. SMITH: I beg to thank you for the courtesy that you have done me in elevating me to the pedestal. I was sitting and having a quiet chat with a former pupil. I will not detain you for any time, but I assure you it is extremely gratifying to me to have the pleasure of meeting with the members of the American Veterinary Medical Association. It has been my privilege, on one or two occasions, to meet with some of the gentlemen I see here to-day, and I am pleased also to meet with a number of my old and esteemed pupils, who are also members of this very important association. I know the history of your association very well. I never had an opportunity of taking any active part in it, but the Ontario Veterinary College, years ago, was represented in this association by Dr. Duncan, who is a member to-day, and who is still in the college. The association, I know, had a very difficult time for a while, like many other associations, but owing to the energy of some of your members, some of them I see here, you have brought it to a status that I do not think can be excelled by any veterinary association in Europe, either in England or on the continent. I will not detain you any longer, but again I thank you for your courtesy.

DR. HOSKINS: I move that the secretary be asked to make proper recognition of the cordial invitations which have been extended to the association during its sessions in the Dominion of Canada. [Carried.]

VICE PRESIDENT KNOWLES: There are a number of applications here yet to consider, and, if there is no further business before the house, we will consider them now.

SECRETARY REPP: I have to submit the following applications:

Thomas Thacker, V. S. (Ont. V. C., 1891), Renfrew, Ont. Vouchers: E. C. Porter and S. Brenton.

A. S. Morrison, V. S. (Ont. V. C., 1891), Chesterville, Ont. Vouchers: A. H. Baker and V. A. Moore.

Geo. H. Belaire, V. S. (Ont. V. C., 1891), Pembroke, Ont. Vouchers: J. G. Rutherford and A. E. Moore.

J. Massie, V. S. (Ont. V. C., 1879), Kingston, Ont. Vouchers: J. S. Butler and J. G. Rutherford.

A. Joly, D. V. S. (Laval Univ., 1890), Waterville, Me. Vouchers: Lemuel Pope, Jr., and A. A. Etienne.

F. T. Daubigny, D. V. S. (Laval Univ., 1889), Montreal, P. Q. Voucher: A. A. Etienne.

J. B. Clancy, D. V. S. (C. V. C., 1892), East St. Louis, Ill. Vouchers: E. L. Quitman and Joseph Hughes.

A. R. Metcalfe, V. S. (Ont. V. C., 1896), Vankleek Hill, Ont. Voucher: D. King Smith.

J. H. Roberts, V. S. (Mont. V. C., 1888), Northampton, Mass. Voucher: Benj. D. Pierce.

DR. LOWE: I move that, inasmuch as these applications are regularly vouched for by a majority of the executive committee, our rules be suspended and the secretary be instructed to cast the ballot of the association for their election to active membership. [Carried.]

SECRETARY REPP: In accordance with your instructions I now cast the ballot of the association for the election to active membership of those whose names have been read.

VICE PRESIDENT KNOWLES: I declare them duly elected.

SECRETARY REPP: I have the following which has just been handed to me:

OTTAWA, CAN., Sept. 3, 1903.

We would respectfully propose for honorary membership in the American Veterinary Medical Association E. V. Wilcox, M. A., '94; Ph. D., '95, Harvard, of the United States Department of Agriculture, Washington, D. C., whose services in the realm of botany have been of great value to the veterinary profession.

(Signed) BENJ. D. PIERCE,
JOHN J. REPP.
J. F. WINCHESTER,

Also the following communication :

OTTAWA, CAN., Sept. 2, 1903.

We desire to present charges against Dr. _____ of Philadelphia, Pa., for violation of the code of ethics of the American Veterinary Medical Association by undercharging his fellow members of the profession, and soliciting practice by circular letter.

(Signed) W. HORACE HOSKINS,
C. J. MARSHALL.

These both came too late for consideration by the executive committee.

On motion, duly made and seconded, these two communications were referred to the executive committee.

Dr. Bell then read the report of the committee on resolutions.

REPORT OF COMMITTEE ON RESOLUTIONS.

WHEREAS, We have learned of the death of Prof, Edward Nocard of Alfort, France, an honorary member of the American Veterinary Medical Association ; and

WHEREAS, His distinguished services to medical science and to mankind have been of inestimable value to the world, and particularly to veterinary medicine ; therefore be it

Resolved, That we hereby express our sense of the great loss sustained by our profession and the world at large.

Resolved, That the thanks of the association are due and are hereby tendered to Senator W. C. Edwards for his most excellent paper on "The Bang System for the Control of Tuberculosis," and that we endorse it as strictly in line with the consensus of advanced veterinary opinion ; and be it further

Resolved, That this association is under great obligation to Senator Edwards for the most delightful day of entertainment which he so hospitably provided for us at his Pine Grove Stock Farm at Rockland, Ont.

Resolved, That the thanks of the association are hereby tendered to the authorities of the city of Ottawa for the use of the council chamber in the city hall for the holding of our meetings

Resolved, That the thanks of the association are hereby tendered to the local committee of arrangements for the splendid preparations made by them for our entertainment, and for the complete manner in which these arrangements have been carried out, rendering our sojourn in the Dominion capital a most pleasant and profitable one.

WHEREAS, We have learned of the death, in South Africa, of Dr. John M. Parker, a valued member of this association; therefore be it

Resolved, That we hereby express our regret at the loss sustained by the profession and this association in his death.

WHEREAS, Some of our members have recently issued circular letters calling attention in great detail to their facilities for rendering veterinary service, and

WHEREAS, These circular letters have been widely distributed to owners of animals, including the clients of other veterinarians; therefore be it

Resolved, That this association holds that such circular letters violate the spirit of our code of ethics and reflect upon the dignity of this association.

It was moved and seconded that the items of the report of the committee on resolutions be taken up seriatim. Carried.

The items of the report were each read by title, and on motion adopted.

On motion the report was then adopted as a whole.

PRESIDENT STEWART: Is there anything further to come before this convention?

I wish to say that I feel greatly honored to have been elected president of this association. I assure you that it has been a pleasure to serve you during this meeting. I have tried to render the best service I could, and I feel that you have done everything you could to assist me.

I shall ever remember this cordiality, and, when I leave this meeting, I shall go away with heartfelt thanks to you all, and with the impression that my interest in the association will grow stronger and stronger as the years go by.

As the business of this association is to be turned over to my successor, Dr. Roscoe R. Bell, who has been elected to be your president for the succeeding year, I appoint Drs. Lowe and Ryder a committee to escort Dr. Bell to the chair.

Dr. Bell was then escorted to the platform amidst great applause.

PRESIDENT-ELECT BELL: I would be an ingrate if I did not feel the greatest appreciation of the distinguished honor that you have conferred upon me. In fact, according to my belief, it is the greatest honor in the veterinary world. I think this is the largest veterinary association,—we know it is the largest in point of numbers,—and I believe the greatest in the matter of work accomplished, in energy and influence. As only one of our members can be chosen as president each year, it is indeed a distinguished honor to have that selection fall upon one's shoulders. I am glad indeed that the principal requirement of the occupant of the presidential chair is faithful discharge of duty, honest guarding of the interests of the association, rather than speech making; because, if the latter were the principal requirement, I fear that the mantle has fallen upon unworthy shoulders. But I believe my fellow members are sufficiently acquainted with me to know that work is one of the things that I like to do; and, when working for such a cause as this, it is doubly sweet, and is not tiring. Gentlemen, I think it is not necessary to beg your coöperation, because that is always given unstintingly to the president, and I assure you that in taking this position at this time I am doing so with the firm intention that when the gavel is turned over next year to my successor the association shall be in as good, if not decidedly better, condition than when I receive it to-day.

I thank you, gentlemen. [Applause.]

Other officers of the society were called upon, and among those present and responding were the following:

VICE PRESIDENT-ELECT KNOWLES: It seems to me I have made too many speeches already. I want to thank you as heartily as I know how for the honor that you have conferred upon me, and trust that I shall always be able to serve the association in some humble manner.

VICE PRESIDENT-ELECT RUTHERFORD: I don't know that I can say anything beyond expressing my hearty and proud appreciation of the honor conferred upon me by my reelection to the office of vice president. I may say that I have never quite recovered from the shock to my native national mod-

esty which I experienced when, last year, going to your meeting in Minneapolis a perfect stranger, I was elected a vice president of this famous association. I looked upon that as a very great honor, coming to an outsider and an alien, personally unknown to the great majority of the members of the association. I took it, of course, as I said at the time, not so much as an honor to myself as an honor to the country from which I came,—Canada. And, in addition to that, I may assure you that I feel, and I know that all the other members of the profession in Canada feel, as do all the other people in Canada who have got any intelligence, and any sense, and any ability to recognize true greatness wherever found, the honor conferred upon the Dominion by the visit of this association to its capital city. [Applause.] We feel that the ice has now been broken, and, as one gentlemen kindly stated that he hoped the association would come back soon, all that we can say as Canadians is, we trust that this hope may be realized, and while we can't expect you every year,—we can't expect you perhaps every other year,—but as often as you can we hope that you may come to Canada, so that the international friendship which is springing up and growing and blossoming as the rose in the veterinary profession may continue to flourish.

I thank you, Mr. President and gentlemen, for this opportunity, and I trust that my relations with the association, whether they ever see fit to honor me by election to any of its offices or not, will ever be of the most friendly and cordial nature.

DR. RYDER: I have no speech to make, but I wish to thank you all very sincerely for the honor which you have bestowed upon me, and I assure you that my best efforts will be exerted for the benefit of this association.

SECRETARY-ELECT REPP: I do not have time to make a speech, but I do wish to say just one thing, and that is that I consider it a very great honor to be secretary of this, the greatest veterinary association in the world. If it were not for this one fact I should never have thought of accepting the position. I thank you. [Applause.]

TREASURER-ELECT LOWE: One year ago at Minneapolis it was said in one of the papers that I had made the shortest

speech on record. I do not think it is necessary to add much to the speech I made at that time. All I wish to say is that I appreciate the continued confidence that you repose in me, and it will be my endeavor to serve you well. [Applause.]

DR. HOSKINS: For twenty years I have watched the incoming and the outgoing of the officers of this association. I have known each and every one of them intimately and closely. I have been identified with much of the work, perhaps more closely than any other single member living to-day, that has been done in the building up of this wonderful association. And I know of no one person who has contributed more to all that we have achieved and accomplished in these twenty years than the outgoing president. His work as secretary of this association came after a time when it was comparatively easy to strengthen and build up the organization to a certain point, but it was during his administration of this office that his fidelity, his earnest work, his constant attention to details, made it possible for us to have this grand organization to-day. It was no honor for this association to simply place him in the presidential chair, for he had earned all that this association could confer upon any one of its members. With equal fidelity in greater or less measure the work has been performed for the past year by the other officers, and I move now that a vote of thanks be tendered to the outgoing president and his associate officers for the excellent work they have done during the past year which has culminated in this the grandest meeting ever held by the American Veterinary Medical Association. [Carried.]

DR. STEWART: Gentlemen, I beg to acknowledge this kind appreciation of my work. You know full well I have never been a speech-maker. I have a reputation, like Dr. Lowe, of making the shortest of speeches. I will not detain you now by trying to make an eulogium on the work of others or of myself. Again I wish to thank you for the honor you have done me.

On motion the convention then adjourned.

PAPERS AND DISCUSSIONS.

THE BANG SYSTEM FOR THE ERADICATION OF TUBERCULOSIS IN CATTLE.

HON. W. C. EDWARDS, ROCKLAND, ONTARIO, CAN.

I have been asked by Dr. Rutherford, chief Dominion veterinary inspector, to read on this occasion a paper on the Bang system for the eradication of tuberculosis as practiced on our farm here. This is a subject more properly to be dealt with by a professional man than a layman. However, if in what I have to say on the subject I express opinions which may be at variance with the accepted theories and practice of the profession I am fully aware that the consideration due to a layman dealing with such a subject will be accorded me.

Before giving expression to our experience and my views upon this most important subject, allow me to express the great pleasure and gratification it affords me to see here to-day this assemblage of so many members of the veterinary profession from all parts of the United States and Canada, as well also as the medical men and others who are here, interested in the promotion of the health of our animals,—animals so very closely allied with human life. Allow me to express my sincerest wish that this gathering may be a most pleasurable one to all those who are engaged in it; that the science of the veterinary profession may be greatly advanced and benefited by the meeting; and further, that the coming together of so many of our friends of the great republic south of us commingling with their Canadian cousins, may be one of those gatherings productive of the good will and friendship which is so desirable in the best interests of the people of both countries.

Coming now to the subject on which I am to occupy your time for a few moments, and referring to a remark made in

a former sentence of this paper, viz., the close alliance and association between human beings and domestic animals, and recalling the statement made by the great German scientist, Dr. Koch, about two years ago, the question of tuberculosis in our domestic animals would appear not to have the same significance as affecting human beings as was formerly generally supposed. The relation or similarity between human and bovine tuberculosis and the communicability from the one to the other is, however, one for scientific and professional men to thresh out. I will not presume to express any opinion on this complex question. I will be permitted, however, I am sure, to say that, for myself, I regard the safest course, while doubt still remains, is to allow the doubt to rest on the side of the greatest security, and continue to assume that there is danger until it is uncontrovertibly proven that there is no danger of human beings contracting tuberculosis in various ways from domestic animals so diseased. But even if finally it is proven that the disease is not communicable from animals to man, there is no reason why the efforts being made for the eradication of the disease in our animals should be stayed for a moment. In our best interests, having regard to the animals only, it is most highly desirable that the disease should be eradicated. It is to be found to the greatest extent in our pure-bred herds, the source from whence sires are obtained for the general improvement of the herds the world over, and unless our pure-bred herds are cleansed of the disease the process of spreading it will go on until it pervades the entire live stock of each country where it is not eradicated, and the extent to which it will be injurious to the live stock of such country will be measured by surrounding conditions; and the loss of animals will be measured largely by the general sanitary or unsanitary and other conditions prevailing, so that, regardless of the matter of the danger to human life, it is highly in the best interests of the stockman that his herds and flocks should be free of disease of every nature.

The question arises, Can tuberculosis, one of the most constant diseases present in our animals, be eradicated? My answer is yes, most emphatically. It can be done, and once eradicated, by reasonable care, healthy herds and flocks in this respect can be maintained. The system we recommend is the

Bang system, which has been rigidly practiced on this farm since the year 1898. In the spring of that year, intending to ship some young bulls to Wisconsin, we asked our Dominion veterinary authorities to test them, and to our surprise and regret it was found that all responded to the tuberculin test. This was our first knowledge of the existence of the disease in our herd. For a few days we were undecided what course to pursue, but on consultation with the Hon. Sydney Fisher, our minister of agriculture (who recommended testing the whole herd, and who further urged upon us the advisability of adopting the Bang system for the eradication of the disease, and on our consenting), he at once placed us in communication with Dr. McEachran, the then chief Dominion veterinary inspector, who immediately had the entire herd tested, and gave us full information and instructions as to the Bang system.

The greater part of the herd responded to the test, and a separation was at once made of the healthy from the diseased animals. The decision was to weed out and kill all but animals of desirable pedigree and individuality, and the slaughtering took place under veterinary inspection. Of the fifty to sixty animals slaughtered, only three proved unfit for human food, but in all traces of the disease were found, in most cases, however, to a very trifling extent. The stables formerly occupied by the herd were most thoroughly disinfected for the reception of the healthy animals, and entirely new premises were erected for the deceased animals we retained in our herd. In like manner the diseased animals have been kept in separate and distinct pastures since that time.

In the inception of our experiments we sterilized the milk from the diseased cows, as directed by Dr. McEachran, and fed the calves with the pail. This plan we found successful in so far as raising sound calves was concerned, but it is a somewhat troublesome one, and further, we lost a few calves, as we believed, from the fact that they were so fed at once without first taking mothers' milk in the natural way. This plan, while successful, we have discarded entirely, and we have adopted the plan of raising the calves on nurse cows, allowing the calf always to suck the mother once before making the change. This plan we have found most successful in every particular, and in the practice of either of these plans described we can

vouch for it from our experience that healthy calves can be most successfully raised from diseased dams or diseased sires and dams, and if all is carefully carried out the percentage of diseased calves raised will be very small indeed, so small that it need hardly be considered. In our experiments everything has been entirely satisfactory to us, and we strongly recommend the practice to our brother breeders, many of whom have, we are sorry to say, up to this time, resisted the advice in this respect of our veterinary authorities both in the United States and Canada, and the subject has been a most controversial one. We can only say for our part that, after a very considerable experience, we are firm believers in the Bang system, and we are believers in the tuberculin test as the only present means, so far as we are aware, of ascertaining the existence of the disease. The only failure, so far as we have knowledge of, is in cases where the disease is in such an advanced stage that reaction does not take place. In a well conducted herd such cases will be few. Further, we have experienced none of the unfavorable results that are charged by those opposing the test. In no case have we known, in the many hundreds of animals we have had tested, of any injury to any animal, neither have we experienced any trouble in abortion in cows tested, and we have had them tested at all stages of pregnancy.

We are firm believers in the tuberculin test, as we have described, and we are also firm believers in the Bang system, and until these are improved upon, if they can be improved upon, we shall practice both in the management of our herd. No matter what the practice and requirements of our government authorities may be, we, on our part, shall not relax our efforts in the direction I have stated until all our herds are absolutely free from the disease; and until better means are known we shall always use the tuberculin test to ascertain the conditions of the health of our herds.

Having given our practice on this farm, I may now be permitted perhaps to make a few general remarks. The discovery of the extent of the disease in the herds of various countries a few years ago caused such a commotion that most rigid enactments were passed by several legislative bodies. Extreme conditions were imposed, doing unfortunately, in our opinion, a great deal of harm, and arousing the antagonism of breeders

and stockmen. Much of this legislation has been rescinded, and more reasonable measures are now adopted as a result of a greater knowledge of the subject.

Mistakes, if there have been mistakes, were not willful, but were well intended on the part of the authorities of each country. We submit, however, that, if the disease is to be eradicated from any country, it must be through a campaign of education and united effort on the part of the breeders of the country. The cessation of importations will never help to eradicate the disease so long as it exists in the herds of the importing countries, and our veterinary authorities will do well to show the simplicity with which the disease may be eradicated, rather than impose unnecessary conditions.

Apart from the test and the application of the Bang system, cleanly and sanitary conditions, good ventilation and plenty of sunlight, and as much outdoor life as possible, are the requisites. To the beginner in stock breeding we would advise great care in seeing to it that he begins his operations with animals free from disease, and that he attends well to his ventilation and sanitary conditions; and if at any time he buys to strengthen his herd let him see to it, to a certainty, that he does not buy disease with the animal.

To the breeder, small or large, who discovers the disease to exist generally in his herd, if the animals are of inferior pedigree and individuality, we recommend turning off to a butcher to be killed, under veterinary inspection, all animals that respond to the test, and beginning anew; but in no case would we recommend the slaughtering of valuable animals where they are still in good breeding form and vigorous appearance. In this case we advise the system of separation we have described in this paper. The same full measure of separation may not always be possible, but the best that can be done should be done in each instance, and under no circumstances should there be neglect of ventilation, good sanitary conditions, plenty of sunlight, and as much open air life as possible.

I am fully convinced of the reasonable possibility of the eradication of tuberculosis from our herds and of the maintenance of sound herds, and my earnest hope is that our breeders may at no distant day be so educated in the direction I

have endeavored to describe that they will put into practice the only present known means of ridding their herds of a disease which in the past has been so destructive in its consequences.

In closing I desire again to express the wish that this gathering may be productive of great and lasting good, and that our friends of the great American republic who have honored Canada with the present visit will return safely to their homes with the most pleasant recollection of Canada and their Canadian friends.

DISCUSSION.

SENATOR EDWARDS: Our plan for disinfection is this: We first thoroughly clean the building; we make it as clean as possible by the use of the hands and brushes and brooms. We then close up every opening thoroughly, and burn a considerable amount of brimstone in iron pots in various parts of the building for about 24 hours. We have a steam boiler on our farm, and while the building is thoroughly filled with brimstone and smoke, we inject steam for about twelve hours. Then when the building dries off we give it a thorough whitewashing, using carbolic acid in our whitewash. Let me say here that the germs lurking in and about the old buildings are most dangerous, so far as this matter is concerned. The sanitary condition I have described is the primary thing. I am of the belief that these germs lurk in old buildings for a very long time.

Now, the separation we make is a perfect one. Our tuberculous and nontuberculous animals never come together. I do not say that I think there is great danger in the healthy appearing animal that has not generalized tuberculosis, but we err on the safe side, and maintain absolute separation.

We have absolute evidence that it is just as well to keep that good-looking, tuberculous herd and breed from it in the common way that farmers do.

Every person has not the same conditions that we have. The general buildings of the country are not like these, and if animals having tuberculosis are saved for breeding purposes by the general farmer the disease will soon pervade his whole

herd. There is no question at all about that; there is the great danger in that regard.

Now, it shows the great desirability—the primary desirability—that the breeders who supply the herds of the country should maintain sound herds. We have other herds at different places, and the same practice is going on in all of our herds. We are determined to have sound cattle, even if it is only for our own comfort and satisfaction. We will never distribute diseased animals through the country for the perpetuation of a disease which we think is so detrimental.

PRESIDENT STEWART: You have had the great pleasure of listening to an explanation of the system employed on this farm. There are other farms throughout this country where an effort has been made to carry out this same system, and I believe there are gentlemen here who have directed such work. The paper is before you for discussion.

DR. ELLIS: I would like to ask the senator a question. I didn't hear him say anything about the persons who take care of his cattle. Are those who handle his cattle free from tuberculosis? Do you allow them to expectorate in your barn?

SENATOR EDWARDS: Well, sir, as far as I have knowledge our men are thoroughly healthy in that respect, and it is my belief that there is not the slightest danger, with such a herd as ours, of imparting the disease to man at all. I think it is the broken down animal with more generalized tuberculosis that offers the greatest danger. We keep our utensils separate, but so far as the men are concerned there are no restrictions upon them.

DR. ELLIS: Are any of your men tuberculous?

SENATOR EDWARDS: We have never had a man with tuberculosis about our farm so far as I have known.

DR. ELLIS: I was called to examine a cow that showed unmistakable symptoms of tuberculosis. The tuberculin test was applied; she reacted; post mortem examination verified the test. It was not understood how this cow had become affected with tuberculosis. She had never been away from the farm on which she had been raised. The dam of this cow had likewise been raised on the same farm. I questioned the owner as to the men who had been handling his stock, and he remembered a man who worked for him some two years pre-

viously, and who died from tuberculosis in about a year after leaving his employ.

DR. REYNOLDS: I wish to ask Senator Edwards as to the number of years that will probably be required to breed the disease out of his herd.

SENATOR EDWARDS: It depends on how long the cows live. It depends on how you go about it. I would say from six to ten years.

DR. MOORE: I would like to inquire whether these reacting animals that have been kept under sanitary conditions have been retested to determine whether or not there is evidence that they have recovered or that they are still harboring the disease in a mild form.

SENATOR EDWARDS: When we first separated our animals, and for the first year or two, we did retest. Some animals did not respond the second time, but we did not return them to our healthy herd. My experience teaches me that it is not an advisable thing to do, because there is always a possibility, as you have only the test and nothing else, that the animal may be getting worse instead of better. The tuberculosis may be advancing in such a way that the animal does not react. As a consequence we do not return animals once separated to our herd. I believe there are recoveries in animals just as there are in human beings, but I would not recommend you to assume that animals once afflicted have recovered. I think it is best, once they have responded to the test, to keep them permanently separated from other animals.

DR. LAW: I have been very much interested in the strong sense that Senator Edwards has shown in this matter of raising sound calves from tubercular dams and sires. Others have accomplished the same thing. We have an instance of the same kind at the experiment station at Geneva, New York, which was absolutely successful. As long as the calves were left to take the milk of their own dams that reacted to tuberculin, these calves, without exception, became tuberculous. When they began to sterilize the milk the next crop of calves grew up healthy and sound, although they had taken the same milk from the same diseased dams, the germ being destroyed. Now, in this matter of returning the animal that has once reacted to a healthy herd. I can see that he occupies a per-

fectly sound position. We have had some experience in that at the New York State Veterinary College. We had two cows picked out from a tuberculous herd at the asylum, and they were sent to us. We tested them with tuberculin at intervals, and very soon neither cow would respond to tuberculin. They even thrived better. They seemed to be doing well, and I was myself betrayed into the impression that one of these animals in particular was sound. We sent them back to the asylum herd. After they got out of our hands, they again began to fail. They were killed, and shown to be seriously tuberculous. I quite agree with Senator Edwards. Animals do recover as men recover, but in a case like this we cannot afford to risk anything upon that. Don't return them. [Applause.]

DR. TAIT BUTLER: I would like to ask how many tests it was necessary to make of the healthy herd before he had no more reactions.

SENATOR EDWARDS: We had not for two or three years any reactions at all. We then got a little crazy after a certain family of shorthorns, and bought some of them for our herd, and we had the disease again. If your sanitary conditions are as I have described, and you make the test honestly and thoroughly, you may have a few to go out on second test.

SENATOR OWENS: Do you test your animals yearly—your healthy herd?

SENATOR EDWARDS: Our herd is tested every spring before they go out to grass. We do not think that the test is so reliable if you test your cattle off grass. We think that the animal is less apt to respond than when it is tested after it has been on feed.

DR. RUTHERFORD: I would venture the suggestion that Senator Edwards owes a very great deal of the immunity from the disease to the sanitary conditions under which his herd is kept. Under ordinary conditions it is altogether likely that there will be more difficulty in eradicating tuberculosis from a herd than he has experienced. We know very well that there is a period between the time when an animal contracts tuberculosis and the time when it is possible to obtain a reaction to tuberculin. That period has been fixed by a double series of experiments which were carried on about three years

ago simultaneously in France and in England. These experiments were carried on in each case without the knowledge that the other series of experiments were in progress, and the results were uniform to a remarkable degree; namely, that a period of from eight to fifty days elapsed between the time of infection and the time when it is possible to obtain a reaction to tuberculin. I think it is very proper that this should be brought out at the present juncture, because it is an important point. This condition makes one retest, if not two, absolutely essential if an owner of cattle which are kept under ordinary conditions is going to maintain his herd free from disease. A man can very easily have all his herd tested, and separate all the reactors from the non-reactors, and the probabilities are that if he makes a test in three months he will find a certain number of reactors among the animals which failed to react on previous test.

I have myself seen a number of cases where owners supposed that their herds were free from disease and neglected the precaution of a second test. A note of warning should be sounded now on this point, because it may not have occurred to some of those present that there is a very great danger of overlooking incipient cases on a single test. [Applause.]

PRESIDENT STEWART: Senator Edwards will now close the discussion.

SENATOR EDWARDS: That question referred to by Dr. Rutherford is a very important one. The second test is always desirable. I do not think you can take too great care. It is quite true that, in making your first test, there may be animals which have been infected, but not long enough to react, and therein lies the desirability of the second test. Now, if stock breeders will do this, not trying to escape the responsibility of this matter, but honestly trying to eradicate the disease, they will avail themselves of all of these desirable conditions. We have bought cows and paid enormous prices for them, going far beyond the four figures, and have them, after they arrive here, go straight to our diseased herd. We are bound that we will have a sound herd.

Now, I just wish to say a word on the question of ventilation, and I think it is a very highly important subject. We have tried various plans. The one we tried before that which

we now have was what was known as the King system. I think that is an excellent system. It is simple, easily adopted, and I think is a most workable one in climates not so cold as that of Canada. But here it does not suit at all. We put it in our entire buildings the winter before last, and had to take it out again. The system at present in use is one advised by my friend, Dr. Rutherford. If you will look at them you will see that the mouths of the ventilator stacks, both for the intakes and the outtakes, are turned toward the wind. The wind blows straight into the intake, and goes right down to the basement. The wind can't blow into the outlet stack, but passes straight through the horizontal portion and across the vertical shaft, causing a suction, and so brings up foul air from below. We found that this works admirably. It is a splendid system for us here. The air passes down through the tubes and into large overhead boxes, and we just perforate those boxes to the extent we think is desirable. We are highly satisfied with the system, and would not change it.

Now, if there is any one thing that requires attention more than another it is the matter of ventilation.

SENATOR OWENS: I would like to ask two questions. When you are drawing the foul air from the building, do you draw it from the ceiling of your stable or from the floor? You also stated that you have abandoned the King system as not being suitable for this country. Would you explain the reason why you have abandoned it?

SENATOR EDWARDS: In answer to Senator Owens, I admit at once that our ventilation is defective to the extent that it does take from the ceiling instead of taking from the floor. But, situated as our buildings are, we could not put it in that way.

Now, concerning the King system. There was too much condensation because of the cold.

SENATOR OWENS: Would not larger flues correct that difficulty?

SENATOR EDWARDS: I am not able to say that, but I will tell you this: We could not get the same distribution we have to-day, and we had a very sad experience. By that system of ventilation we lost a bull worth over \$2,000. It contracted a cold. The inlet draft was at times too great.

Dr. Law asks me how our system works in calm weather. Gentlemen, it doesn't work. [Laughter.] After all I am a bit of a scientist, you know. There is sure to be a little difference between the temperature of the air outside and that of the air inside. The conditions are never just the same. Just as soon as the conditions in the two places are different there will be air currents. But it works best if there is a little wind. I'll tell you another thing. When we haven't wind enough we'll send over to the United States for a few of our friends to come over here. [Laughter.]

DR. KNOWLES: I did not have an opportunity yesterday to express my opinion on Senator Edwards' paper. While we had some very excellent technical papers read at yesterday's session, and particularly the grand paper of Dr. Salmon, I believe that Senator Edwards' paper, from a sanitary standpoint, is one of the most important papers we have ever had read before this association, and I believe that the veterinary profession of both the United States and Canada owes to Senator Edwards an everlasting debt of gratitude. You are all acquainted with the antagonism that the tuberculin test has met with from the breeders throughout both countries, and you all understand the attitude of some of our best live stock magazines. I feel that Senator Edwards' paper, by being widely read, and on account of his standing as a breeder and a man of note in his own country, will have a great influence toward convincing breeders of the necessity of the measures which he has so faithfully carried out. I should like to hear more discussion on this paper.

PRESIDENT STEWART: Is it your pleasure to reopen the discussion of this paper?

DR. BAKER: To bring it formally before the association, I will make as a motion that this association indorse Senator Edwards' paper as a valuable contribution to the veterinary literature of this country. [Carried.]

BOVINE AND HUMAN TUBERCULOSIS.

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The prevention of tuberculosis in the human subject has been for years, and still is, one of the most interesting and important questions confronting the sanitarian. There have been many differences of opinion; many cases in which the same facts have been interpreted in different ways; and much discussion and divergence of views as to what actually are the facts.

After the publication of the results of the investigations of Villemin, Chauveau and Gerlach, in 1866, 1868 and 1869, which demonstrated the communicability of tuberculosis, veterinarians looked upon bovine tuberculosis as a communicable disease, and were inclined to consider it as identical with human tuberculosis. Their clinical experience, in stables where the disease clearly was introduced by a purchased animal and spread from beast to beast until the greater part of the herd was affected, confirmed the conclusions of these investigators, and it appeared to them further that there was often a remarkable coincidence between the use of milk from tuberculous cows and the development of the disease in mankind.

These views, however, did not gain much standing with the medical profession. The opinion of the great majority of physicians that tuberculosis was an hereditary disease was too deeply rooted to be dislodged except by the most overwhelming array of facts inconsistent with it. Koch's discovery of the tubercle bacillus in 1882, taken in connection with the experiments showing the transmissibility of the disease, brought a complete revolution of the medical mind with reference to its causation and prevention, and seemed to establish the essential identity of the tuberculosis of various species of animals with each other and with that of the human race.

New doubts arose, however, when, in 1889 and 1890, Rivolta and Maffucci showed that there were very marked dif-

ferences between human and avian tuberculosis. Theobald Smith's papers, published in 1896 and 1898, demonstrating marked differences between a bacillus from the nasua and one of bovine origin, and between bacilli from human and bovine sources, recalled similar observations which had been made by Villemin, Pütz and Sidney Martin, and aroused renewed interest in the study of varieties of this bacillus and the significance which might be attached to them. In 1897 and 1898 Dubard published papers on tuberculosis in cold-blooded animals, showing that the bacillus in this disease had varied in an extraordinary degree from the human type.

Notwithstanding the extreme divergence in biological characters between the avian, the piscine and the mammalian types of bacilli, investigators concluded that they were essentially the same, and that the avian might be changed into the mammalian and the mammalian into the piscine types by suitable modification of the environment. If, therefore, the avian bacillus could be made to produce tuberculosis in mammals and the mammalian bacillus to produce this disease in fishes and frogs there appeared no reason to doubt that the bovine bacillus could produce tuberculosis in man; since the human and bovine bacilli resemble each other much more closely than do the avian and mammalian or the mammalian and piscine forms.

This, briefly, was the condition of our knowledge of the question when, in 1901, Koch read his memorable paper before the British Congress on Tuberculosis. In that paper he said: "I feel justified in maintaining that human tuberculosis differs from bovine, and cannot be transmitted to cattle." Concerning the transmission of bovine tuberculosis to man, he admitted that it was impossible to give this question a direct answer, because the experimental investigation of it with human beings was out of the question. He said, however: "It is well known that the milk and butter consumed in great cities very often contain large quantities of the bacilli of bovine tuberculosis in a living condition," and if these bacilli "were able to infect human beings, many cases of tuberculosis caused by the consumption of alimenta containing tubercle bacilli could not but occur among the inhabitants of great cities, especially the children." He concluded that, "in reality, how-

ever, it is not so." The only facts which he cited in support of this remarkable conclusion were some selected post-mortem statistics, which indicated that primary tuberculosis of the intestine was an extremely rare disease. He expressed an important assumption as follows: "That a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first." But he did not admit that all such cases are caused by bacilli ingested with the food. "It is just as likely," he said, "that they were caused by the widely propagated bacilli of human tuberculosis, which may have got into the digestive canal in some way or other, for instance, by swallowing saliva of the mouth." He said we may determine from which source the infection occurred by inoculating cattle with a pure culture of the bacilli found in the tubercular material, and for this purpose he recommended subcutaneous injection, which he said "yields quite specially characteristic and convincing results."

He reported that he had experimented upon nineteen heads of cattle, by infecting them in various ways with pure cultures of tubercle bacilli taken from cases of human tuberculosis or with sputum from consumptive patients. In some cases the tubercle bacilli or the sputum were injected under the skin, in others into the peritoneal cavity, in others into the jugular vein. Six animals were fed with tubercular sputum almost daily for seven or eight months; four repeatedly inhaled great quantities of the bacilli, distributed in water and scattered in the form of spray. None of these cattle showed any symptoms of the disease, and no trace of tuberculosis was found in their internal organs. The animals were absolutely insusceptible to these bacilli. An almost equally striking distinction between human and bovine tuberculosis was brought to light by feeding swine with tubercular sputum, and by injecting tubercle bacilli into the vascular systems of asses, sheep and goats. In all these experiments bovine material was used upon similar animals for comparison.

These experiments would be quite convincing as to the harmlessness of tubercle bacilli from man for these various animals were it not for the fact that it has been shown there are great variations of virulence in tubercle bacilli from different human subjects. Vagedes, working under Koch's di-

rection, had shown this three years before the paper was read at London, and yet Koch gives no hint of this, nor does he admit the least suspicion that there might be different results with different infective material.

Perhaps the most astonishing statement made by Koch in his London paper is found in the following sentence: "If one studies the older literature of the subject, and collates the reports of the numerous experiments that were made in former times by Chauveau, Guenther and Harms, Bollinger and others, who fed calves, swine and goats with tubercular material, one finds that the animals that were fed with the milk and pieces of the lungs of tubercular cattle always fell ill of tuberculosis, whereas those that received human material with their food did not."

Now, the fact is, Chauveau, in a remarkable series of experiments, did infect cattle with human tubercular material, and obtained just as serious results as with bovine material. His conclusion was that the human tubercular virus acts on the bovine species exactly like the tubercular virus which comes from the bovine species itself. Bollinger inoculated a young calf in the peritoneal cavity with material from a human lung. When killed at the end of seven months the mesentery and peritoneal covering of the spleen presented a number of tumors from the size of a pea to that of a walnut, which microscopically were identical with those found in pearly disease under natural conditions. The retroperitoneal and mesenteric glands were tuberculous also. The paper of Guenther and Harms upon this subject I have not been able to consult, nor have I seen any satisfactory summary of it. At least two out of three of the older experimenters cited by Koch had therefore obtained positive results by inoculating cattle with human tubercular material.

Koch was equally inexact in his citations concerning his own previous declaration on this subject. He said: "Even in my first circumstantial publication on the etiology of tuberculosis I expressed myself regarding the identity of human tuberculosis and bovine tuberculosis with reserve." What he really said in that paper was this: "Bovine tuberculosis is identical with human tuberculosis, and therefore a disease transmissible to man. * * * However great or small may

be the danger which results from the consumption of meat or milk affected with bovine tuberculosis, it is present, and must therefore be avoided."

In the period which has elapsed since the London congress, a period of less than two years, a considerable number of investigators have had positive results in the inoculation of cattle with tubercular material from the human subject and with pure cultures of tubercle bacilli from the same source. Among these may be cited Ravenel and de Schweinitz in this country, and Thomassen, de Jong, Delepine, Orth, Stenstrom, Fibiger and Jensen, Max Wolff, Nocard, Arloing, Behring, Hamilton and Young, and Dean and Todd. Some of these and other investigators have also produced the disease in sheep, goats and swine, by infection in various ways with human tuberculosis. As the animals named were refractory in Koch's experiments, the success of various experimenters with them is quite significant.

In the Bureau of Animal Industry two distinct lines of experiments have been carried on, in order that one might be checked up against the other. De Schweinitz, in the bio-chemic division, has isolated nine cultures from human tuberculosis. Two of these were derived from human sputum, three from cases of generalized tuberculosis in adults, and four from cases of generalized tuberculosis in children. These cultures were compared with a newly isolated virulent culture of bovine tuberculosis, and among them two of the cultures from children were found to be identical in their cultural and morphological characters with the bovine bacillus. They also killed rabbits and guinea pigs in as short a time as did the bovine bacillus. Hogs inoculated subcutaneously with these two cultures from children died of generalized tuberculosis. Two calves, weighing over 300 pounds each, developed a generalized tuberculosis after a subcutaneous inoculation with these virulent human cultures, and a yearling heifer inoculated with one of them showed generalized tuberculosis when killed three months after inoculation. Both the cattle and the hogs had been tested with tuberculin, and found to be free from tuberculosis before the inoculations were made. It will be observed that fifty per cent of the cultures obtained from children were virulent for cattle.

Mohler, working in the pathological division, has obtained three very virulent tubercle bacilli from the human subject. A goat inoculated subcutaneously with a culture of one of these died in thirty-seven days with miliary tuberculosis of the lungs involving the axillary and prescapular glands. This bacillus was obtained from the mesenteric gland of a boy. Of still greater interest is a bacillus isolated by Mohler from human sputum. A goat inoculated subcutaneously with a culture of this germ died in ninety-five days of pulmonary tuberculosis. A cat inoculated in the same manner died in twenty-three days of generalized tuberculosis. A rabbit similarly inoculated died in fifty-nine days of pulmonary tuberculosis. A rabbit inoculated with a bovine germ for comparison lived ten days longer than the one inoculated with this sputum germ.

It is plain from these experiments that there is a great difference in the virulence of tubercle bacilli from human sources, and that while some of these are not capable of producing serious disease in cattle, sheep, goats and swine, there are others which produce generalized lesions and are very fatal with such animals.

Having disposed of the argument that human tuberculosis is not transmissible to animals, let us briefly consider the other proposition, viz., that bovine tuberculosis is not transmissible to man.

The proportion of cases in which the primary lesion is in the intestine is a very poor criterion from which to judge the proportion of cases caused by ingestion of the bacilli with the food. With experimental animals in which the disease has been produced by feeding tubercular material we very frequently fail to find any lesions in the intestines, and we find the oldest lesions in the mesenteric glands, the liver, spleen, kidneys, or perhaps in the lungs. Koch tells us that in his experimental swine fed with the tubercular sputum of consumptive patients no trace of tuberculosis was found, except here and there little nodules in the lymphatic glands of the neck, and in one case a few grey nodules in the lungs. With these results before his eyes how could he consistently claim that we must find primary lesions of the intestine in all cases of ingestion tuberculosis? With pigs particularly, but probably with all animals to a certain extent, the tubercle bacilli taken

with the food may penetrate the walls of the pharynx and advancing down the neck gain entrance to the lungs. The same method of infection has been repeatedly noted with children. Again, it has been shown by the experiments of Desoubry and Porcher and those of Nicholas and Descos that various kinds of bacteria, including tubercle bacilli, may penetrate the intestine without causing any local lesion, and pass directly into the chyle vessels and from these into the blood whenever milk or fat constitutes a considerable proportion of the food.

These facts being admitted, it is absurd to hunt through the statistics for primary lesions of the intestine as an argument for or against infection with bovine tuberculosis. In the hospital statistics of Great Britain we find a considerable proportion of cases with children (twenty-five to thirty per cent) in which there are primary lesions of the intestine. In other countries such cases are quite rare. Heller has recently made 714 post mortems of children who had died of diphtheria, and among these found 140 who had an associated affection of tuberculosis in various organs. Only 1.43 per cent showed primary intestinal tuberculosis, but in 37.8 per cent the primary lesion was in either the intestine, the mesenteric glands, or in other abdominal organs. It would appear, therefore, that even in Germany there is abundant evidence of ingestion tuberculosis.

This brings us to the question as to how we can tell whether a case of tuberculosis which is evidently caused by penetration of the bacilli through the walls of the pharynx or those of the intestine is due to bovine bacilli taken with the food or to human bacilli which have been swallowed with the saliva, etc. The test that Smith and Koch have laid down is that we should isolate the bacilli and by the inoculation of cattle show that these bacilli have the virulence of the known bovine bacillus.

This resumé of the condition of the experimental knowledge of the subject makes clear the importance of such experiments as have been made in the Bureau of Animal Industry to show the effect of bacilli from the human subject upon the principal domesticated animals. These experiments aid in filling a gap which it was necessary to bridge before we could

fully and completely answer the arguments of those who believe it is unnecessary to consider the existence of bovine tuberculosis as a factor in the control of human tuberculosis.

You will observe that de Schweinitz has isolated tubercle bacilli from human lesions, which, when cultivated in the laboratory, are of the bovine type, and that he has produced fatal disease in bovine animals by inoculating them subcutaneously with cultures of these bacilli. That is, he has fulfilled the most difficult requirements as to experimental work which those who oppose the theory of the transmission of bovine tuberculosis to man have been able to formulate. The results of these experiments make it necessary to admit either that human and bovine tuberculosis are identical, or that, being different, the bovine form is transmissible to man. There is no third theory by which the presence in human lesions of tubercle bacilli having the characteristics of the bovine type can be satisfactorily explained.

From the standpoint of experimental medicine the evidence which has been brought forward should be sufficient to settle the question of the transmission of bovine tuberculosis to man. Koch plainly said in his London address that all that was necessary to decide with certainty whether the tuberculosis of the intestine was of human or of animal origin was to cultivate in pure culture the tubercle bacilli found in the tubercular material and to inoculate cattle with them. In his latest address on this subject, which was made at the International Conference on Tuberculosis at Berlin, he practically abandoned the discussion from the experimental standpoint and devoted his time to a discussion of clinical evidence. As might be expected, he found none of the cases of supposed transmission of bovine tuberculosis to the human subject to be entirely free from the possibility of criticism. He seemed to forget that, if demonstrations could be so easily made from clinical observations, it would be unnecessary to devote so much time and expense to experimentation.

In the address mentioned he laid down a set of conditions which must be fulfilled to make clinical evidence convincing. Briefly, these are as follows:

1. Certain proof of tubercle, and where possible the primary focus must be supplied.

To this condition the only objection is that the primary focus, which is made so much of, is of little value in determining the origin of the infection, for the reasons already given.

2. Other sources of infection must be excluded with certainty.

This condition absolutely excludes all clinical evidence bearing upon the subject of tubercular infection. How is it possible to prove that any given individual has not been exposed to the bacilli of human tuberculosis? He tells us that the main source of the infection of tuberculosis is the sputum of consumptive patients. We are all inclined to admit this; but suppose we try to get such clinical evidence in favor of this proposition as he asks for in regard to bovine infection, where are the cases recorded? You say a certain person who has recently contracted consumption had habitually been in a room with another consumptive patient, and was infected by that patient. Very well; but how can you prove that that person never ate any tuberculous meat, never partook of any tuberculous milk, never ate any butter containing the tubercle bacillus, never had an opportunity to be indirectly infected from the hands of cooks or from table utensils which had been in contact with tuberculous meat, milk or butter, and was never exposed to the infection scattered in so many ways by tuberculous animals? Can you exclude with certainty all these sources of infection? Certainly not; the thing is impossible. Now, what becomes of the evidence upon which Koch bases the assertion that the main source of the infection in man is the sputum of consumptive patients? Surely he should be willing to try the clinical evidence bearing upon this point by the same requirements which he demands for the clinical evidence by which we endeavor to establish infection from bovine sources.

3. In each case of alleged infection from milk affected with "perlsucht" the condition of the rest of the people who have taken the same milk should be borne in mind. These fellow consumers form to a certain extent a control experiment, and if of the numerous people who have drunk the suspected milk only a single one sickens, this weighs decidedly against the belief that this one person was infected by the common food.

Suppose we apply this principle to our clinical case of al-

leged sputum infection, what is the result? Are there not scores of people exposed to many consumptives without contracting the disease? Are not the most of us exposed scores of times to consumptives without having contracted the disease? And yet, how erroneous it would be to exclude clinical evidence suggesting contagion because only one of those exposed to a certain consumptive had contracted the malady.

4. The source of the milk should be attended to. Since in recent years it has become more and more evident that milk containing tubercle bacilli is yielded only by such cows as suffer from tuberculosis of the udders, the general statement that some one has drunk milk from a cow suffering from *perlsucht* no longer suffices to prove to us that *perlsucht* bacilli have really reached his digestive organs. It must be milk from a cow with tuberculosis of the udder, and therefore a statement on this subject should not be wanting in a report on milk infection if it is said to be complete.

This argument is antiquated, since it has been proved again and again that the milk of tuberculous cows often contains tubercle bacilli when no lesions of the udder can be discovered. Of the many experiments that have been made to determine the proportion of tuberculous cows which yield infectious milk, the average results are about fifteen per cent, while the cases with tuberculosis of the udder are not over two or three per cent. It is not necessary to comment further on these requirements.

Koch advances another line of argument which I have heard elsewhere, and which appears to me most misleading. He says: "We cannot but expect that if tuberculous infection through partaking of meat and milk infected with *perlsucht* really occurs as frequently as is asserted direct observation must make this obvious." He then recalls the so-called cases of meat poisoning, and cases of illness resulting from the use of the flesh of animals which had suffered from splenic fever; also, to the distribution of typhoid infection through milk. "It is," he alleges, "extraordinarily characteristic of all these outbreaks that they do not occur as isolated illnesses, but in groups and often in epidemics. This could scarcely be otherwise, for the milk of a cow, the flesh of a sick animal, is practically always partaken of by several, and often by a great

many people at the same time, who will be infected and fall ill, certainly not as a whole, but on a larger or smaller percentage.

* * * A tuberculous infection must also take shape in the same way if tubercle bacilli which are virulent for man are found in meat or milk."

The fallacy of this argument lies in the difference in the illnesses referred to and in the conditions of exposure. The opportunities for contracting the illness known as meat poisoning or that of splenic fever are extremely rare, and it may reasonably be assumed when a group of such cases occur at the same time and near together that they are of common origin. Moreover, the period of incubation in these diseases is very short, and the symptoms are striking and serious from the beginning of the illness. Attention is immediately attracted to them. It is the very opposite with tuberculosis. There are opportunities everywhere for contracting it; there may be a dozen cases in the same town, and yet if the individuals are not in the same family no one thinks of a common origin. Then the period of incubation is so long and the access of the disease is so mild that it does not attract attention until so long a time has elapsed that the incidents which occurred at the time of infection have faded from the mind and can no more be recalled. Finally, the time which passes between infection and the appearance of marked symptoms of the disease varies so much with different individuals that if infection occurred at the same time with a number of persons the disease would not appear so simultaneously as to attract special attention, as it does in meat poisoning or in splenic fever infection. The comparison with the distribution of typhoid fever infection through milk is a better one, but the difficulty of tracing this infection in a community where the disease is common and the sources of the contagion numerous may, I think, be appreciated by all. But typhoid infection must, as a rule, be much more easily traced than tubercular infection, because the sources of the contagion are not so numerous nor widely distributed, the incubation is shorter, and the symptoms are more serious at the beginning. On the other hand, so much of the milk and butter sent to market is infected with tubercle bacilli, and we consume these food products from so many different sources, that practically every one must take bovine bacilli into his

digestive organs, not once only but many times. Now, when the disease develops, even if we prove by the characteristics of the bacilli that it has been caused by germs of bovine origin, how can any one point with certainty to this milk or this butter, consumed weeks or months before, and say that it was the cause of the infection?

Take, if you please, the average citizen, who travels from place to place, passing his nights in sleeping cars under possibly infected blankets, or in hotel rooms of the history of which he knows nothing, who drinks at the fountains out of the common drinking cups, who must necessarily come into close contact with many consumptives, who inhales dried sputum on the streets. If he becomes infected, can you point with certainty to the source of his infection? Certainly not; nor can you point out groups of patients who have been infected by one and the same consumptive person, although many individuals were exposed to that person. If this cannot be done in the case of infection from human sources, how can we expect it to be done with infection through meat, milk and butter?

We can only hope to get fairly satisfactory evidence as to the source of infection in the case of young children who have been in one house during their whole lives, and who have not come into contact with any tuberculous persons. But in most cases it would appear from the present condition of our knowledge that the virulence of the bacilli for cattle will be the best evidence of the source of the infection; that is, whether it comes from man or from the lower animals. The experimental proofs of tubercle bacilli in human lesions having all the virulence of the bovine bacillus are incontestable, and should cause sanitarians to take adequate precautions against infection through the products of diseased animals. The frequency of infection from animal sources can only be determined by long and careful investigation, but we do know how common the disease is with cows, how often the bacilli are found in the milk, and how frequently tuberculosis attacks children at the milk-drinking age.

Very recently (July, 1903) Kossel has given some of the results of the investigations of the German Tuberculosis Commission. This commission has studied and tested the viru-

lence of thirty-nine different fresh cultures of bacilli from human tuberculosis. Twenty-three of these cultures were from adults and sixteen from children. Among the sixteen cultures from children four were virulent for cattle. Two of these were cases of primary tuberculosis of the digestive organs, and two others were miliary tuberculosis. Kossel states that while these cultures were not as virulent as the most virulent cultures of the tuberculosis of animals, they were much more virulent than the weaker cultures of cattle tuberculosis. It is plain, therefore, that these cultures were of about the same virulence as the average bovine tuberculosis, and that this commission, working according to the principles laid down by Koch, has found twenty-five per cent of the cases of tuberculosis in children investigated by them to have been caused by infection with bovine tuberculosis. Whether this is a greater or smaller proportion than some have believed is of little consequence. The figures are definite, and to most of us it would be astounding if it should be found that they are of general application. The danger from bovine tuberculosis can no longer be doubted; and whether it is found that twenty-five per cent of the cases of tuberculosis in children or a greater or smaller proportion are due to infection from animal sources, it is plain that the proportion is sufficiently high to make the prevention of such infection a matter of the greatest importance.

DISCUSSION.

DR. STEWART: Gentlemen, this paper is open for your discussion.

DR. NOACK: Dr. Koch to-day really admits that he made a mistake in saying that bovine and human tuberculosis are not identical at the congress in London. A member of the government board of health recently, in a paper read before a meeting of the physicians in Berlin, stated that the tuberculosis of the human and bovine are identical, only the pathological changes are somewhat different, and therefore I think that it rests with Koch to explain how he made a mistake in his experiments.

SENATOR EDWARDS: Perhaps the emperor was a little to blame.

DR. NOACK: That is more than I can say, but while this man belongs to the government board of health, we have to suppose that Koch is admitting his mistake and is trying to get out of it.

DR. LYMAN: I would like to ask Dr. Salmon if he noticed in the cultures that were taken from human tuberculosis to inoculate an animal whether there was any difference in the susceptibility according to the age of the animals tried.

DR. SALMON: We have not investigated that subject. We inoculated a herd of cows with which we got positive results. We followed practically the same line of work upon which Koch based his opinion.

DR. NOACK: To the question just asked, I would like to answer that von Behring made a statement that human tuberculosis inoculated in the goat was very virulent, and taken from the goat and transferred to cattle was so virulent that inoculated cattle died in three to four weeks' time.

DR. MOORE: I would like to ask Dr. Salmon a question which his paper does not discuss. It was stated by Dr. Smith, and I think by Dr. Ravenel, that these organisms could be determined by their cultural and morphological characters, and, as Dr. Salmon and his assistants have demonstrated, these organisms from human tuberculosis could be transmitted to cattle. I would like to ask whether the culture could be determined without making the test. Would it be safe to say which was human and which was bovine?

DR. SALMON: These two cultures had more or less the appearance of bovine cultures, but as Dr. Moore probably knows as well as I do that human and bovine bacilli differ in other than morphological characteristics, and it is probably not safe to decide by microscopical appearance of the germs which is from the human or bovine source. I certainly should not attempt to make a discrimination in that manner. It may be that further study will enable us to do so. I think that entirely too much stress has been laid upon the difference in the morphology in the cultures in bovine and human tuberculosis.

DR. WHEELER: I should like to ask Dr. Salmon if any different conclusions have been arrived at in the inoculating of simians (monkeys) with bovine tuberculosis?

DR. SALMON: Yes; there have been quite a number of experiments made in Washington and in Europe, and the simians were just as susceptible to bovine as to human tuberculosis, and they died very quickly from the bovine inoculation.

PRESIDENT STEWART: Are there any other speakers?

HON. SIDNEY FISHER: I would like to say that I esteem it a very fortunate thing indeed that Dr. Salmon has read this paper before us. All of us who are interested in the question of tuberculosis, as between live stock and the human being, have been very much disturbed in our minds for the last year or two in consequence of the statements of Dr. Koch in London. I confess that, knowing Dr. Salmon as I have for many years, and knowing the great work he has been doing, I have looked to him to a large extent on behalf of the people of this country and this continent to disprove the statements of Professor Koch. I am very glad that to-day we have had presented to us the results of his investigations and argument in regard to this question. I have followed the discussions which have occurred since Dr. Koch made his statements, and I appreciate very much indeed the clear, incisive, and I think conclusive, manner in which Dr. Salmon has shown that Dr. Koch made a mistake. It is a great satisfaction to those who have been working upon this question to have such a clear and conclusive statement, and I trust that this, with other statements of the same character which have come, and will come in the future, from scientific men, will prove that it is in the interests of the human race that our lower animals should be carefully freed from and protected from this dread disease. We in Canada have been doing a little in this direction, and it would be a great misfortune if the word should go out among the people in this country and to your people in the United States that it is a matter of indifference whether the lower animals were infected with tuberculosis or not. I have no hesitation in thinking and saying that if this was to go forth among the stock keepers of this continent the results would be disastrous, not only to the health of the cattle, but also to the people taking care of them. I feel that this paper of Dr. Salmon's is a matter of great importance to the whole community, as well as to the association and the medical practitioners. [Applause.]

DR. HIGGINS: I would like to ask a question concerning the virulence of the germs. It is this: Is there in the temperatures of the human and the animal difference enough to account in any way for the difference in the virulence of the bacilli?

DR. SALMON: That is a question which I do not feel competent to answer. There does seem to be a difference between many of the bacilli obtained from human sources and bovine bacilli. It is because of this difference that I am unable to say. On the other hand, we find a gradation between these weak human bacilli and the most virulent ones we get from bovine sources. Whether this indicates that the bacilli are attenuated in the human body or whether it does not, I am unable to say. We have tried to handle these broader questions first. Before we can answer the others it will probably take years of experimentation. It was necessary that we know positively whether animal tuberculosis could be conveyed to man. It was especially important after the presentation of Dr. Koch's paper. We have endeavored to do it in such a way that our experimentations could not be criticised. There is a great deal to do, and it requires the very best precaution should be taken to have the results absolutely correct.

DR. HIGGINS: I would like to ask whether in the experiments conducted by the bureau there is any data which go to show that the more virulent human infections are the more recent infections?

DR. SALMON: You will observe that in most of the cases of virulent human infection the bacilli have been obtained from abdominal lesions, which would seem to indicate that they had been recent infections. It was the same way in our isolation of bacilli from children. We examined the bacilli in four cases from intestinal lesions, selecting of course those cases which were probably recent, and which were most likely infected from human sources, and found half of them to be virulent bacilli of bovine type. Our experiments are still in progress. I have merely taken results bearing upon the most important questions, and brought them to this meeting.

DR. RUTHERFORD: I predicted to a number of my friends that this meeting would be historical. I anticipated, although

I had no private information,—I anticipated that Dr. Salmon's paper would deal so thoroughly with the statements of Professor Koch as to leave him without any argument. It is very gratifying to me, as one who has consistently discredited the statements of Dr. Koch, to have had them so fully answered as they have been to-day by Dr. Salmon. This paper which has been read here to-day in Rockland will be published, and its influence will be world-wide. We veterinarians who believe in the transmissibility of bovine tuberculosis to the human subject have been occupying a very unpleasant position for the last two years. We have been met on every hand by the objection that a great deal of the work which we have been doing, in attempting to eradicate bovine tuberculosis, was unnecessary, at least so far as human life was concerned. We have felt all along that Professor Koch's position was a false one. Professor McFadyean made a wonderfully good showing at the Tuberculosis Congress in London within a very short time after the delivery of Professor Koch's address, but it was impossible to answer fully at the time, because Professor Koch took the whole scientific world by surprise. It is certainly greatly to the credit of Dr. Salmon and to the Bureau of Animal Industry that within a space of two years he has been able, with the assistance of his colleagues, to so fully answer the arguments brought forward by Professor Koch. [Applause.] Veterinarians who have kept their eyes open and exercised common intelligence did not need to be told that bovine tuberculosis was transmissible to human beings. There were, or are, but few men in the veterinary profession to-day who have the knowledge and the ability and the standing in the scientific world to speak with the "Germans in the gate" as regards tuberculosis, and therefore we had to suffer in comparative silence, although we knew all the time that we were in the right and that Professor Koch was in the wrong. It is very gratifying to me as one of those veterinarians to have here to-day Dr. Salmon, who has so completely demolished the arguments of Professor Koch. I feel that I could not let this opportunity pass without congratulating Dr. Salmon, not only on my own behalf but on behalf of the veterinarians of Canada, for the complete and satisfactory manner in which he has replied to Professor Koch to-day.

PRESIDENT STEWART: We have with us one who certainly is in a position to discuss this matter, Dr. Montizambert.

DR. MONTIZAMBERT: I do not feel that this is a matter that can be discussed fully, but one about which only one opinion can be held, and that is general appreciation and consent. I am very glad indeed that you have given me an opportunity to express appreciation and gratitude to Dr. Salmon for his instructive paper. It is a satisfaction to members of the medical profession to remember that at the meeting where Dr. Koch announced his peculiar view, he was contradicted in the room by Lord Lister and others. There were three great addresses, one by Koch, one by Bruerdelle, and one by McFadyean. The address of Professor Bruerdelle was prepared in advance and printed; in it he took the view that there is danger of human infection by the milk and meat of diseased animals. McFadyean not only opposed Dr. Koch's theory, but, as I happen to know, re-wrote his entire paper in the two days between Dr. Koch's paper and his own, and met Dr. Koch's view in a most satisfactory way. If I may be allowed one personal word before I sit down, sir, it is one of gratitude to Dr. Rutherford and the president of the association in giving me this opportunity of being present to-day as an honorary, temporary member of this association. It is a great pleasure to hear so many bright and brainy men, I was going to say of the sister profession, but will say sister branch of our one profession.

THE IMPORTANCE OF VETERINARY SCIENCE TO AGRICULTURE.*

HON. SIDNEY FISHER, MINISTER OF AGRICULTURE, OTTAWA, CAN.

I wish, first, in speaking to this convention on behalf not only of the government but of the people of Canada, to welcome the American Veterinary Association to our capital city. I wish to say to our friends from the United States who have honored us with their presence that we bid you welcome most heartily and sincerely, and thank you for your presence and work in Canada.

It is a fortunate thing that science is entirely and absolutely cosmopolitan; that it does not recognize and is not bound by lines of nationality. Therefore it is that people from all lands, subjects of all countries, citizens of all realms, can come together and discuss scientific questions for mutual benefit and make a common advance for the whole world.

We are in one sense fortunate here, in the smaller country,—the newer and the poorer country,—in that we reap the advantage of what you are doing in your larger sphere in the American Union. You have enormous wealth placed by the people of your country at the disposal of your scientific men, freely and willingly. You have a group of well educated, well informed, trained scientists,—many groups, I might say,—who are engaged in these researches; and by reason of our proximity; by reason of the fact that the conditions and circumstances in the two countries are similar, we here, in Canada, are able to reap the benefit of the labors of your people, and we thank you for the advantages which we thereby are enabled to enjoy.

We of Canada contribute our mite, small though it may be, to the sum of knowledge, and we are glad to know that our mite is at your disposal just as you gladly give us the greater sum of your advantages.

*Verbal address.

Now, I have been asked to-day, or it has been suggested to me, to say a word in regard to the value of the veterinary profession and veterinary science to the agriculture of the country, and I have no doubt that what I say, based upon my observation and knowledge of the conditions and circumstances in Canada, will be somewhat applicable to the same conditions and circumstances in the United States. I therefore feel that, in addressing you, I am addressing one body, and upon the one set of conditions.

Our agriculture is largely based on the live-stock industry. It is true that we send large quantities of cereals to supply bread for the countries of Europe. But if you examine the trade tables of the two countries you will find that the animal products occupy a far more important position. Just as a mere instance of the figures of our own country, I would say to you that last year we sent \$68,000,000 worth of animals and animal products to England, and we only sent \$34,000,000 worth of all other agricultural products.

It is evident that in the matter of production alone our live stock is the basis and the main branch of the agriculture of this continent. There is another reason why this should be so, and why we may rejoice that it is so. It is through the live-stock industry, in the first place, that the fertility of our soil can be best and most cheaply maintained, and it is also in the development of our live-stock industry and its products that the farmers can best show their intelligence and apply the highest development of their mental faculties. It is unfortunately the case that a great many of those who do not study agriculture and know very little about it think that it is merely a rude form of labor, drudgery, requiring but little knowledge and no particular training or education. We who know something about agriculture know that this is a radical blunder, and that the man who makes the best success to-day in farming on the continent of America is he who is most highly trained, most highly educated; and in the development of the intellectual side of the farmer, for the purposes of his work, the branches connected with the live-stock industries are those which require the highest intelligence and the highest education. Therefore it is well for the land, well for agriculture, that the live-stock industry is the chief basis of our agricultural prosperity.

This being the case, the care of live stock, its treatment and its development, is one of the most important branches of agricultural study; and you, Mr. President, and the members of your association are largely instrumental in this development.

To the veterinary profession is entrusted the health and the care of the live stock of the continent. Perhaps some of you will be disposed to say that this is not so much so as it ought to be; that the average farmer, instead of calling in the properly equipped and educated veterinary surgeon, with a diploma, is rather disposed to go to the cow-doctor and the horse-doctor. There is a good deal of truth in that,—too much; and I would like to say just a word or two as to how that can best be obviated and changed.

In the first place, I would say that until recent years the veterinary profession had not been organized as at present, and the individual effort of the trained veterinarian, scattered over a large area, dotted here and there, working each in his own sphere, without mutual assistance and coöperation, exerted but little influence on the community. Now that you are organized into such an association as this, I am quite sure that your efforts will bear greater fruit.

There is another thing. In days gone by the members of the veterinary profession (and I say it with all due respect and not in any sense as applying to you who are here) themselves were not very far removed from the ordinary cow-doctor or horse-doctor. I say this with due respect, and with every consideration of the number of veterinary surgeons who are now far removed; and the result was that the farmer who wished to get his animal treated was not able to appreciate any great difference between the man who had the diploma and the man who had not. This has been changing very rapidly in recent years.

We have had in Canada two well-equipped and thoroughly established veterinary colleges, which have been turning out men who are well qualified for the practice of their profession. You have I believe also in the United States several important veterinary colleges and a number of veterinary faculties attached to your agricultural colleges. This is going to bring about an entirely new condition of affairs. It has

already brought such new condition about to a very considerable extent. And just as that new condition spreads through the country, so the people of the country who have animals to treat will appreciate the value of the trained, scientific man, and the veterinary profession will not only assume a higher standing in the community, but will also (and perhaps this is an important item which you will all appreciate) have better practice and more remunerative revenue.

In this connection the department of agriculture of the Dominion, and the agriculture as cared for and as directed to a certain extent by that department, owe a great debt of gratitude, and also a large debt which can only be reckoned in dollars amounting up to the millions of dollars, to the veterinary profession of Canada. Our flocks and herds have been very exceptionally free from contagious diseases,—exceptionally free, and this has been largely due to the efficient management of the quarantine service, which has been conducted under my department now for the last twenty years or so. I say “my department.” It commenced long before I personally had anything to do with the department. Therefore I am not making personal boast. We know perfectly well that in Canada there has never been a case of contagious pleuro pneumonia. There has been hardly any foot and mouth disease. We have been able to keep this country free from these diseases which have so ravaged the herds and flocks of the countries in Europe. Therefore the people of Canada who own the live stock owe a deep debt of gratitude to the veterinary profession, which has been the controlling influence in this quarantine work.

In addition to this the department of agriculture at Ottawa employs a considerable number of veterinary surgeons, who keep general supervision over the health of the live stock, and spread information as to how that live stock can be best guarded from contagious disease.

We must look to the intelligence and to the labor of the veterinary profession to continue this happy condition of affairs, and to guide us laymen, who are responsible for the administration of public affairs, and tell us how we can do the work, and what funds we must place at their disposal to accomplish that work well.

I am glad to be able to say that the parliament of Canada has never hesitated, when the professional experts have told them that certain sums of money were needed in the interests of the live stock, to supply the money required; and perhaps it is due to this to a certain extent that those efforts have been successful. And, therefore, in addition to the debt which we owe to the profession, we owe also a certain debt to the people of the country, who have been able to rise to the occasion through their representatives.

In such an organization, and with such a gathering as this, many new points in connection with practice are brought out, are thoroughly threshed and discussed, and the men who come to the convention are able to go back to their homes and to utilize and spread the knowledge here acquired. Perhaps even more important than that is the influence which the educated, trained professional man can exert in the community in which he lives, in raising the tone and standing of his local profession. When you come together and exchange views in such a gathering as this I am sure you must go away from this gathering prouder of your profession, more satisfied and confident in it, and more determined to impress upon the community the value and the importance of the veterinary profession. [Applause.] You will feel that you yourselves must show to the community the value of your professional training, and then demand the respect due to your profession, and the respect to you personally who are the visible, personal embodiment of that profession in that particular community.

It has been a reproach against the farmers throughout the country that they were not respected; that they were not thought as much of as they ought to be. As a farmer, I venture to say that, if that is the case, it is largely due to the fact that the farmers do not respect themselves; and if to-day the veterinary profession is not so respected as it deserves to be, and ought to be, it is to a large extent because veterinary surgeons have not been sufficiently self-assertive, have not been sufficiently strong and confident in themselves to demand that respect for themselves and their profession which is their due. It depends to a large extent upon the profession itself—upon the men in the profession—as to what will be the status accorded them and their profession.

With the facilities for professional education which we have to-day, with the facilities for school education all over the country, the men of the veterinary profession are the peers in education, in knowledge and in scientific attainment, and in all that gives the impression of a self-respecting, well-informed citizen, of any people in the country; and that being the case, I am sure that their profession will rise to that point where it will be universally received as one of the learned professions,—the sister branch, as Dr. Montizambert so well put it yesterday, of the one great medical science.

Now, this is very closely connected with the subject upon which I was asked to speak. The farmers will not employ you if they do not respect you. The farmers to-day—very few of them, at least—ever think of bringing in a quack doctor to treat sick children. There was a time, not long ago, in parts of this country, where they did. It will be a very short time, if indeed the time has not already arrived, when the farmer will no longer think of bringing in the quack doctor for his live stock.

The following figures may be interesting to veterinarians. I will not give them in detail: There are to-day in Canada 1,568,000 horses; 5,528,000 head of horned cattle; there are 2,488,000 head of sheep, and 2,354,000 head of swine. All these animals are subject to the ailments that afflict the animal flesh, as well as the human flesh, and have to be cared for. They have to be treated when sick, and in case of a prevalent contagious disease they must be protected, and the disease must be stamped out.

I would call your attention to the live-stock industry in this country. We have that number of horses to-day in Canada; we had ten years ago a hundred thousand less, and there was not so great an increase in the number of horses as in most of our other live stock. We had a million and a half less of cattle ten years ago than we have to-day. We had just about the same number of sheep ten years ago that we have to-day, but we had three-quarters of a million less of swine ten years ago than we have to-day. Evidently the field for veterinary work is rapidly growing in the country; and therefore I say again there is abundant opportunity for well-educated, well-

trained veterinary surgeons in Canada. I have no doubt the same is true in the United States.

But, sir, I do not think that I am saying too much when I say that the future status and the future remunerative practice of the veterinary surgeons of this continent depend upon themselves. They have it in their own hands, through the respect which they have for themselves and which they exact from the community. Knowing them to be worthy of all respect, I am sure that it will be granted to them freely by everybody, and that the live-stock interests of the continent are safe in the hands of the men who have organized this association and whose representatives and leading spirits are here. Gladly we welcome you to the capital of the Dominion and wish you Godspeed and a most successful career for your organization. [Applause.]

A MICROSCOPIC STUDY OF A CASE OF TUBERCULOSIS IN A COW WITH REFERENCE TO DISTRIBUTION OF BACILLI.

JOHN J. REPP, PHILADELPHIA, PA.

In November there was sold, at a good price, in central Iowa, at a public sale of pure-bred cattle, a shorthorn cow, apparently in excellent condition. In the following January the purchaser sought the advice of a veterinarian in reference to the cow, because she had begun to manifest signs of disease. The veterinarian says that he made a diagnosis of generalized tuberculosis, and upon the insistence of the owner, contrary to his opinion as to what should be done, he prescribed treatment. On February 10th the owner sent for the veterinarian to make an autopsy upon the cow, which had just died. He found, as he expected, generalized and extensive tuberculosis. He sent some of the tissues to my laboratory for examination. No autopsical record accompanied them, nor have I since been able to obtain any. The tissues sent were a piece of lung of about two pounds weight, a piece of liver of the same size, and a mediastinal lymphatic gland the size of a goose egg, all of which were the seat of diffuse caseation; also, a portion of the right ventricle of the heart, covered on the external surface by a cheesy crust consisting of the thickened and caseous epicardium, and a piece of the ileum about ten inches in length. The tissues were sent packed in ice, consequently they reached me in a perfectly fresh condition.

Smear preparations from all of the tissues stained by the Ziehl-Neelsen method showed enormous numbers of tubercle bacilli. The tuberculosis of the intestine was most interesting to me. As the English language contains only meagre reference to tuberculosis of the intestinal mucosa, I may be justified in speaking more at length in reference to this feature. The mucous membrane presented tubercles and tubercular ulcers in considerable number. The ulcers showed upon their

surface a soft, semi-fluid exudate. A platinum loop brought into contact with this exudate would take up with ease a portion of the exudate, which, when transferred to a cover-slip and dried and stained, would show myriads of tubercle bacilli. I say myriads because no other word would convey an adequate idea of the enormous numbers in each minute quantity of the exudate.

The nodules were translucent, or gray, and did not become caseous, but were broken down by a process of liquefaction, necrosis resulting in the formation of ulcers. The ulcers were indolent, and did not show any tendency to granulation or active inflammatory change.

I desire to direct attention to a very important feature in connection with this intestinal tuberculosis; namely, the fact of the admixture of the exudate containing large numbers of tubercle bacilli with the alimentary matter, and the passage of the bacilli from the bowel with the feces. Inasmuch as the exudate from the ulcers was so easily removed, it is impossible to conceive that the aliment could pass over it without a resulting admixture of the two. Thus large numbers of tubercle bacilli would be carried through the intestinal tract and out of the body with the feces. Following the bacilli further, it would be found that the feces containing them would be scattered about the stable, and some of it would lodge upon the food. Thus the atmosphere and the food would be contaminated with tubercle bacilli, and this would in turn lead to infection of exposed animals with tuberculosis. Also, if it should happen that hogs would follow a herd containing an animal thus affected with intestinal tuberculosis, it is not to be doubted that one or more of the hogs would become tuberculous through eating portions of the fecal matter.

Smear preparations from the affected lung tissue also show tubercle bacilli in extraordinary numbers. It is unquestionable that the cow constantly coughed up exudate and degenerated material from the lungs laden with bacilli, which contaminated her surroundings, and rendered conditions favorable for the infection of healthy animals which might be exposed.

I also made an examination of the tissues in order to determine the numbers and distribution of the bacilli. Portions

of the lung, mediastinal lymphatic gland, heart, liver and intestine were fixed in 4 per cent solution of formaldehyde and then embedded in celloidin. The staining was done by Mallory's method for celloidin sections, as follows: 1. Water. 2. Stain lightly in alum-hematoxylin. 3. Wash in water. 4. Carbol-fuchsin one to three minutes' steaming. 5. Wash in water. 6. Orth's discharging fluid one-half to one minute. 7. Wash in water thoroughly to remove acid and bring back blue color to nuclei. 8. Ninety-five per cent alcohol until

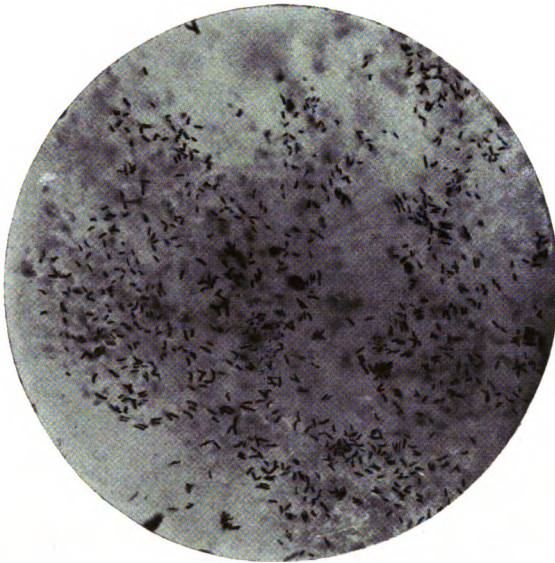


FIG. 1.—TUBERCLE BACILLI IN MUCOSA OF ILEUM.

From Photomicrograph.

fuchsin is entirely discharged. 9. Aniline oil. 10. Xylol, several changes. 11. Xylol balsam.

The celloidin is colorless, nuclei blue, tubercle bacilli red and the remainder of the preparation colorless.

This method gave uniformly excellent results.

The Ileum.—The transverse section shows, on the inner aspect of the intestine, an ulcer 10 mm. in diameter, which involves both the mucosa and the submucosa. The base of the ulcer shows several areas of caseation which do not stain.

These areas are surrounded by zones of intense cellular proliferation. Throughout the floor of the ulcer are enormous numbers of tubercle bacilli, although in the caseous foci they are much fewer than where the cells have not undergone disintegration. The glands of Lieberkühn and the villi are entirely obliterated, and if any of the solitary or agminated lymphatic nodes are included in the section they are so fused with the other cellular elements as to be unrecognizable.

The muscular coat is not involved in the tubercular process, and is *entirely free from tubercle bacilli*.

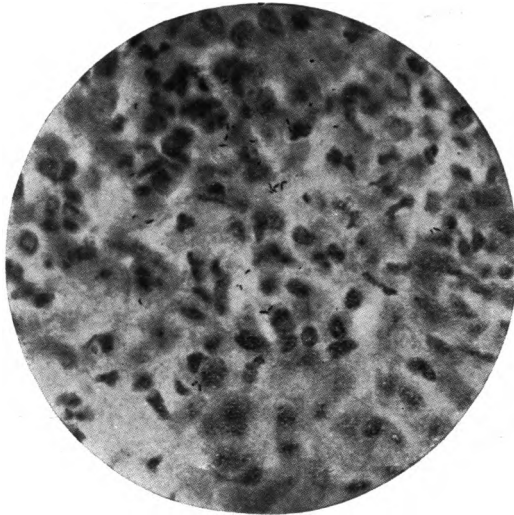


FIG. 2.—TUBERCLE BACILLI IN LIVER SECTION.

From Photomicrograph.

In the fibrous tunic is a tuberculous nodule about 5 mm. long by 2 mm. broad. At the summit of this nodule is a point of ulceration 1 mm. in size, with the edges overhanging. This nodule is the seat of intense infiltration, with round cells and epithelioid cells, and shows a few minute foci of caseation. This tubercle, as well as the part of the fibrous coat not included in the tubercle, shows myriads of tubercle bacilli. There are no giant cells in the section of intestine.

Liver.—The section was taken from the zone just outside of the large caseated mass. To the naked eye it did not seem

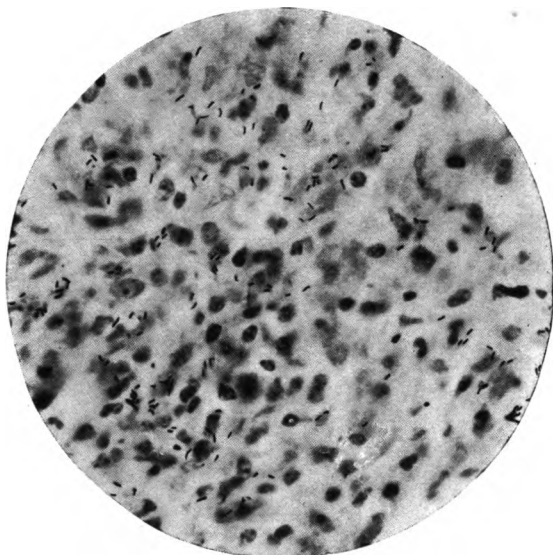


FIG. 3.—TUBERCLE BACILLI IN PERICARDIUM
From Photomicrograph

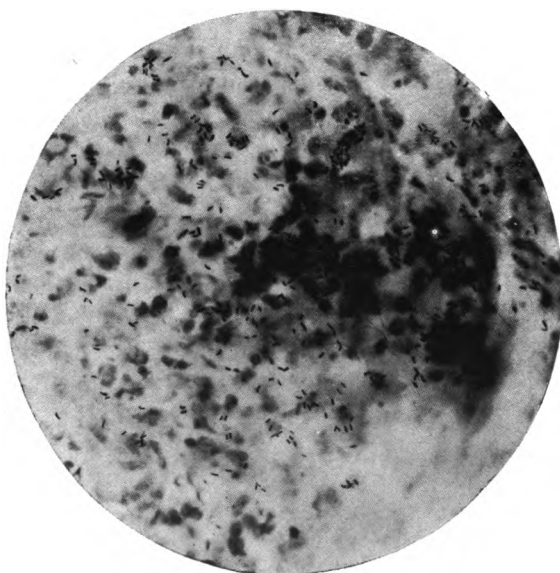


FIG. 4.—TUBERCLE BACILLI IN MEDIASTINAL LYMPHATIC GLAND.
From Photomicrograph.

to have departed very far from normal. It shows about a dozen miliary tubercles in the initial stage of formation, and containing giant cells. The giant cell is in some cases the only histologic evidence of a tubercle, and seems to be formed by a fusion of the epithelial cells. There are no caseous areas. A few tubercle bacilli are present in each of the tubercles, some of which are within the giant cells. The healthy epithelium is entirely free from bacilli. No sections were taken from the caseous portion of the liver.

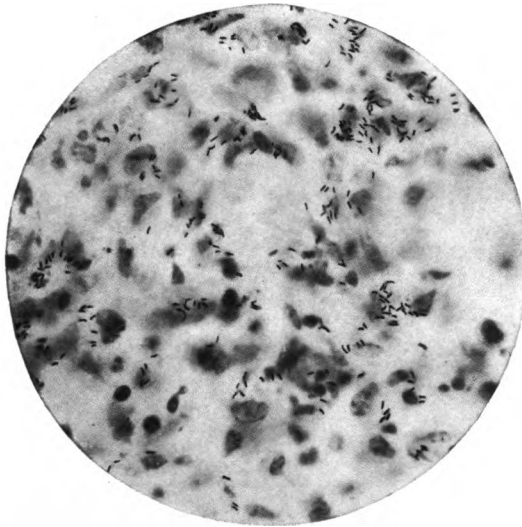


FIG. 5.—TUBERCLE BACILLI IN LUNG.

From Photomicrograph.

Heart.—The visceral pericardium is 2.8 mm. thick. The capillaries are very much dilated and filled with blood, but their walls are not thickened. There are no foci of caseation and no giant cells, but there is extensive infiltration with lymphocytes, epithelioid cells and fibroblasts. Surprisingly large numbers of tubercle bacilli are scattered uniformly throughout the pericardium down to the line of junction with the myocardium. No tubercle bacilli are present in the myocardium, which has remained perfectly healthy. In this case the heart muscle has shown great power of resistance to the encroach-

ment of the tuberculous process. It is probable that the heart muscle is invaded by tuberculosis only in the event of tubercular embolism.

Mediastinal Lymphatic Gland.—This is the seat of diffuse tuberculosis. There are many areas of caseous degeneration which comprise the greater part of the section. These areas are poor in tubercle bacilli. There are irregular bands adjacent to the cheesy areas made up largely of fragmented nuclei and debris of cells. These bands are extremely rich in bacilli. In many places they are in clumps. It is rare to find one isolated. There are a few islands, the seat of infiltration, with lymphocytes and epithelioid cells in which the bacilli, although plentiful, are much less numerous than elsewhere.

The fibrous capsule of the gland, which is 1 mm. thick, is almost entirely free from tubercle bacilli, only a few appearing here and there at places comparatively remote from one another. No giant cells are present.

Lung.—The portion of the lung examined is the seat of diffuse tuberculosis. The greater part of the section is caseous. The alveoli and bronchioles in portions which are not caseous are filled with cells or fragmented nuclei. In a few small areas the cells are comparatively free from necrotic changes. No giant cells are visible. The lung section is everywhere thickly strewn with tubercle bacilli, although in the caseous areas and in the areas where the cells are not fragmented they are not so numerous as in the partially degenerated zones or bands bordering upon the caseous foci. Tubercle bacilli are liberally distributed amongst the cells which fill the alveoli and bronchioles.

DISCUSSION.

The discussion on this paper was postponed, with the understanding that it was to come in connection with the stereopticon work, but was then postponed again owing to the lateness of the hour. [M. H. R.]

DR. REPP: I would like to say just a word in regard to the practical phases of the paper which I presented yesterday. We have in the case reported a concrete example in which a cow,

apparently healthy, was sold at a public sale of pure-bred cattle, at a good market price, and which, within a few months, died of generalized and extensive tuberculosis; and which, as was shown, was in a condition at the time of its death, and almost doubtless at the time of its sale, to spread the infection both through the feces and through the expectoration, and thus transmit the disease to animals with which it was associated. There are unquestionably many such cases. It is fair to assume that many such cases go through the markets annually, but here is a concrete example which has been traced out and proven. It seems to me that this is an important popular feature of the case.

AVIAN TUBERCULOSIS.

VERANUS A. MOORE AND ARCHIBALD R. WARD.

During the summer just past, we have been studying the infectious diseases of poultry in the State of California.† Among the affections that were more or less prevalent we were surprised to find tuberculosis to be very common in certain localities. As the disease is one of considerable interest bacteriologically, and in this instance of much economic importance, we were constrained to make a brief statement concerning our findings. The motive for such apparent haste was the hope that we might stimulate a deeper interest and a stronger desire on the part of the practicing veterinarian to observe, describe and report the diseases of poultry.

Although avian tuberculosis has been referred to quite frequently in recent years, there seems to be very little literature in our country containing descriptions of actual cases or results of investigations connected with the same. This fact has suggested to some of us that possibly avian tuberculosis did not appear in this country to a sufficient extent to be of any practical value. Heretofore, in our experience, all specimens of supposed tuberculosis in fowls that have come to us for examination have proved to be lesions resulting from animal parasites,* or, of a neoplastic nature.**

†At the last session of the California State Legislature an appropriation was made to the University of California for the purpose of investigating the diseases of poultry. This placed the work in the Agricultural Experiment Station.

*A Nodular Tæniasis in Fowls. Circular No. 3, Bureau of Animal Industry, 1895.

**During the last six years a number of cases of reported tuberculous livers of chickens have been sent to the New York State Veterinary College for examination. In nearly every case they have proved to be neoplastic growths, for the greater part consisting of small round cells. They have been tentatively diagnosed as sarcomas and lymphadenomata.

Pernot,¹ in 1900, describes the symptoms and gross lesions of tuberculosis in fowls. He reports six outbreaks in as many flocks in the State of Oregon that occurred during the preceding year, with a loss ranging from five to fifty chickens in each. Tubercle bacilli were found in "countless numbers" in the feces in the latter stages of the disease. He does not mention tubercle bacteria beyond the single statement that they were found.

Chester² refers to avian tuberculosis as a commonly observed disease in Europe and "not a rare affection" in the United States. He does not, however, report any personal observations.

Bray,³ in 1896, reported tuberculosis in chickens near Kansas City. He found a flock of a hundred or more in which there were a number of cases. The source of infection is stated to be the eating of tuberculous sputum. The diagnosis was made on the general appearance of the lesions. Tubercle bacteria were not found.

Field† states that tuberculosis is very prevalent among fowls. In giving the causes of death of incubator chicks he says: "Of these, 113 chicks had tubercles in the lungs; five on the walls of the heart, five on the walls of the gizzard, one on the intestine; and one on the testes. Tuberculosis is to be suspected when whitish, cheesy lumps are to be seen on any of the internal organs." In his report no mention is made of the structure of the lesions or of the finding of tubercle bacteria.

Dr. J. O. Cobb of the United States Public Health and Marine Hospital Service, now stationed at Los Angeles, tells us of finding the disease in chickens near Detroit, Mich. He suggested that the infection came from eating human tubercular sputum, but he had no experimental evidence to support the clinical suggestion.

In a private letter Dr. S. Stewart of Kansas City states that the disease has been reported several times in that locality.

¹Pernot, E. F. : "Investigations of Diseases in Poultry." Bull. No. 64. Oregon Agricultural Experiment Station, 1900.

²Chester, F. D.: "Common Diseases of the Fowls; Their Control and Treatment." Bull. No. 47. Del. Agr. Expt. Sta., 1900.

³Bray, T. A.: "Tuberculosis in Chickens." *Jour. of Comp. Med. and Vet. Archives*. Vol. XVII. (1896), p. 461.

†Associated with Martial and Warren. "On the Mortality of Incubator Chicks." Bulletin 61. Rhode Island Agricultural Experiment Station, December, 1899.

In making a post-mortem examination of a few fowls that were sent to the California Experiment Station for that purpose, we found the livers to be more or less sprinkled with greyish nodules which suggested the lymphadenomata frequently observed in chickens' livers in the east. A microscopic study of the lesion, however, showed that the disease belonged to the granulomata rather than to the group of tumors. Sections stained for tubercle bacteria revealed the presence of immense numbers of these organisms. This led to a careful investigation of the flocks from which these fowls had come and to others kept in the immediate neighborhood. We found that many of the owners had recognized this disease by such names as "spotted liver," "going light" and "rheumatism." In a few instances it was spoken of as consumption. We also learned that the number of fowls dying annually from this disease was, in the infected flocks, gradually increasing, but, as is so often the case, the loss had been looked upon as one of the necessary adjuncts to the poultry business. In one instance we found a flock in which many of the hens were looking poorly, and from the man in charge we learned that they were dying with "spotted liver." The former owner stated that thirteen years before he began the poultry business. Three years later this disease appeared, and had gradually spread until 1902, when he lost 300 fowls from a flock of 1,460. Most of these dead fowls were opened and the livers found to be spotted. At the time of our visit there were a number of well advanced cases which we examined. This is the only instance where we found the disease to have caused such a heavy loss in a single year. There were, however, a number of flocks in which the mortality from this disease was very high.

The symptoms observed in our cases were uniform but not altogether diagnostic. Emaciation, which in advanced cases becomes extreme, and anaemia were constant. The comb, the skin, and the visible mucosa about the head were usually pale. As the course of the disease advanced the feathers became ruffled and the fowls were weak, dumpish and moved about very little. The eyes were bright in most cases until the end was near. The appetite was good, and the fowls ate ravenously until a few days before death. The temperature was in most cases within the normal limits; rarely it was subnormal. It varied from 102.7° to 107.2° F. in those we killed for examination. In the greater number it was 106 or above. The blood was pale. The hemo-

globin varied from thirty-five to seventy per cent as tested with Gowers' hemoglobinometer. The blood count gave from 1,010,000 to 2,600,000 red corpuscles per cubic millimeter. There appeared to be a slight increase in the number of white corpuscles, especially in the eosinophiles.

A number of the fowls were lame. Pernot mentions this as one of the important symptoms in the cases he observed. It has been attributed to joint lesions, but thus far we have not found such changes.

The lesions were widely distributed, and varied much in their location in different individuals. The liver was most frequently involved. The spleen, intestines, mesentery and kidneys were infected in point of frequency in the order mentioned. The

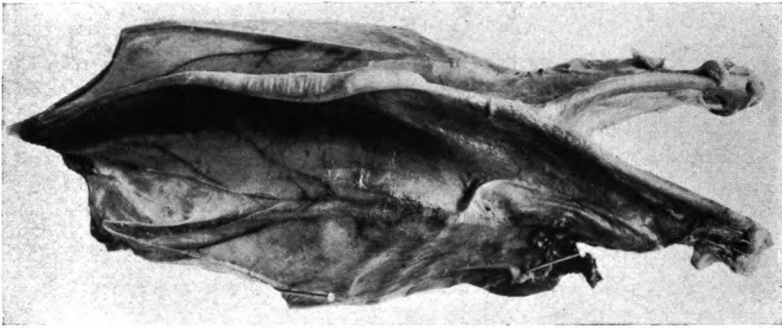


FIG. 1.—ATROPHY OF PECTORAL MUSCLES.

Sternum of fowl dead of tuberculosis; skin removed. Extensive emaciation of the pectoral muscles. From photograph.

lungs were involved in but one fowl. This was a case of generalized tuberculosis, and the tubercles were all of the milliary type. The skin was affected in but one case. In this there were no lesions in the internal organs. A closer examination of the tubercles, especially in the liver, showed that they usually appeared in the earlier stages of the disease as small greyish points varying from .25 to 1 millimeter in diameter. In advanced cases they were much larger. These nodules had a cheesy consistency, and were easily removed from the surrounding tissue. The removed, necrotic nodules had a roughened surface. The color was greyish or whitish in the early stages, but in the later ones it changed to a yellowish tint. Occasionally

there were two distinct crops of tubercles, one consisting of nodules 4 to 6 millimeters in diameter and separated by a centimeter or more, and the other of closely set greyish tubercles one-fourth to one-half millimeter in diameter. In a few cases the tubercles were few in number but larger in size. The liver cells between the tubercles were usually in a state of more or less degeneration, and frequently fat globules were numerous. The



FIG. 2. TUBERCULOSIS OF THE SKIN.

Head and part of the neck of Fowl No. 48. From photograph.

blood spaces were more than normally distended with blood. The lesions in the spleen, like those in the liver, consisted of minute or larger tubercles of a greyish or of a yellowish tint. In a few cases the central portion of the larger tubercles was homogeneous, darker in color and more or less hyaline in appearance and consistency. The tubercular growths in the intestine appear to have started in the walls of the intestine. They pre-

sented a glistening appearance, greyish in color, and firm to the touch. Frequently they were confluent. When single they varied from one to ten millimeters in diameter. On the intestine they were usually sessile but when they appeared on the mesentery they were frequently pedunculated, oval and varying from two to five millimeters in length. On section the young tubercles exhibited a greyish, glistening surface, but the more advanced nodules contained recognizable necrotic centers. In

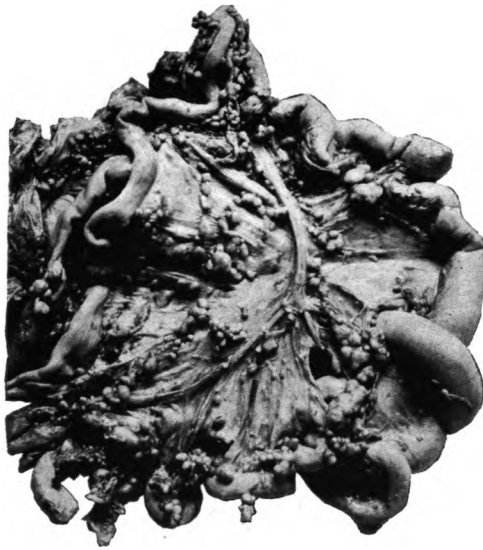


FIG. 3.—TUBERCULOSIS OF THE MESENTERY. FOWL 55.

There were a few small tubercles on the intestine. From photograph.

the larger tubercles the necrotic centers often opened into the lumen of the intestine.

In the skin the lesions consisted of a cellular infiltration usually about the root of the feathers. Frequently the nodules became confluent, but they did not involve the subcutaneous connective tissue. In but one of our cases were the bones involved. Here the lesions consisted of small enlargements of the ribs at the union with the costal cartilages. When crushed, and smear preparations were made from them, and properly stained, tubercle bacteria appeared in large numbers.

A microscopic study of the smaller tubercles of the liver showed them to consist of a necrotic center surrounded by an irregular zone of epithelioid and giant cells. This was surrounded by a band of tissue consisting for the greater part of liver cells more or less disintegrated, free nuclei and a few infiltrated round cells. This zone was circumscribed by a narrow reactionary band consisting very largely of round cells. In a few cases we have found large numbers of eosinophiles in the



FIG. 4.—TUBERCULOUS LIVER. FOWL 51.
Tubercles of various sizes. From photograph.

tubercle and in unusually large numbers in the intervening liver tissue. This structure seems to be constant in both small and large tubercles, and not strikingly different from the structure of tubercles in certain of the mammals. The larger nodules seem in some instances to be the result of a continuous growth of a single tubercle, and in others to have resulted from the coalescence of a number of small ones. The necrotic center and resisting zone of round cells are beautifully demonstrated by their reaction to nuclear stains. The appended table shows the distribution of the lesions in the seventeen cases of which we have post-mortem records.

DISTRIBUTION OF TUBERCULOUS LESIONS IN FOWLS.

FOWL No.	Died or killed.	Temp. F. before killing.	ORGANS INVOLVED.*									
			Liver.	Spleen.	Intestine.	Mesen- tery.	Kidney.	Ovary.	Lungs.	Heart.	Bones.	Skin.
47	K	.....	XXX	.....	.....	.....	.....	.....	.....	.....	.....	.....
48	D	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
X	K	106.5	XXX	.....	.....	.....	.....	.....	.....	.....	.....	XXX
50	K	107	XX	XX	X	.....	.....	.....	.....	.....	.....	.....
51	K	105.2	XXX	.....	X	.....	.....	.....	.....	.....	.....	.....
52	K	107.4	XXX	XX	.....	.....	.....	.....	.....	.....	.....	.....
55	K	107.2	.....	.....	XXX	XXX	.....	.....	.....	XX	.....	.....
57	D	.....	XX	X	X	X	.....	X	.....	.....	.....	.....
60	D	.....	.....	.....	.....	.....	.....	X	.....	.....	XX	.....
61	K	108.4	XXX	X	.....	.....	.....	.....	.....	.....	.....	.....
62	K	106.4	XXX	X	X	.....	.....	.....	.....	.....	.....	.....
64	K	107.4	XXX	XX	X	.....	.....	XXX	.....	.....	XXX	.....
65	K	107	XXX	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	K	107.6	XXX	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	K	106.8	XXX	XX	.....	.....	.....	.....	.....	.....	.....	.....
76	D	.....	.....	.....	.....	XXX	.....	.....	.....	.....	.....	.....
77	K	105.8	XXX	XX	.....	XXX	.....	.....	.....	.....	.....	.....

* The relative numbers of tubercles are indicated by the number of X's. XXX indicates an extensive invasion, XX a less number of tubercles, and X very few. Figures III. and IV. show lesions represented by XXX.

In properly stained cover-glass preparations made from tubercles in the liver, spleen and kidneys, tubercle bacteria were found in very large numbers. In sections of these organs they

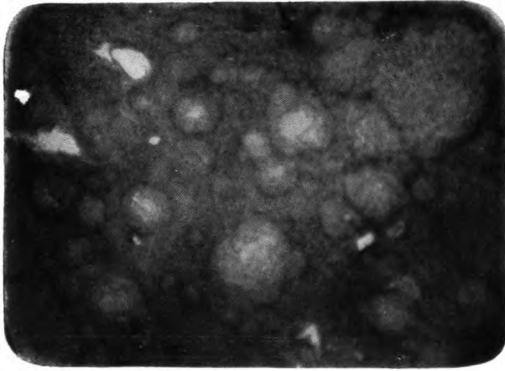


FIG. 5.—SECTION OF LIVER SHOWN IN FIGURE 4.

This shows tubercles of various sizes. Taken with 16 mm. Zeiss apochromatic lens, no ocular.

often appeared in dense masses within the tubercles, but rarely were the bacteria detected outside of them. They are most numerous at the edge of the necrotic central mass. We have not

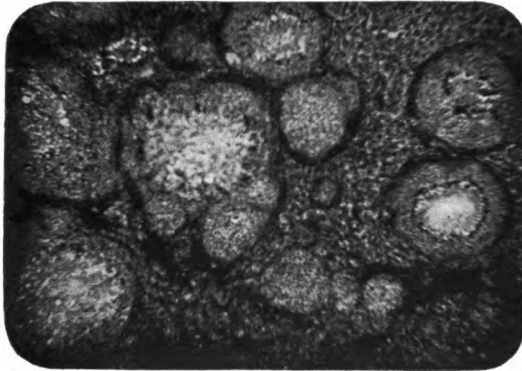


FIG. 6.—SECTION OF TUBERCULOUS LIVER.

Section of liver same as in Figure 5, more highly magnified, showing tubercles of various sizes. Taken with a 16 mm. Zeiss apochromatic lens, and ocular No. 4.

observed them in the giant cells. In the cover-glass preparations from the skin lesions, they were likewise very numerous, but in these preparations they were sometimes associated with

micrococci. In cases of intestinal lesions, where the tubercles had opened into the lumen, tubercle bacteria were found in the scrapings of the mucosa. They were not found in cover-glass preparations from the intestine where the liver only, or where the liver and spleen were involved.

The tubercle bacteria resembled more closely in their size and general morphology the human and bovine varieties than the description generally given in bacteriological works would suggest. That is, there were those that were short and thick, and

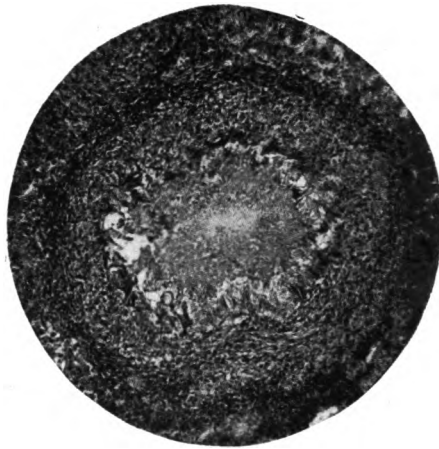


FIG. 7.—SECTION OF TUBERCULOUS LIVER.

A single tubercle still more highly magnified. This shows the homogeneous necrotic center surrounded by giant and epithelioid cells and the outer reactionary zone. Taken with an 8 mm. Zeiss apochromatic lens, and ocular No. 4.

others that were long, more slender and occasionally beaded. Somewhat long and club-shaped forms were occasionally detected. There seems to be a marked difference in the morphology of the organism when cultivated on different media. Those growing on potato are very much longer than those found in the tissues or those from glycerin-agar cultures. It is too early for us to report any details concerning the morphology of this organism.

Considerable difficulty has been experienced in obtaining cultures directly from tuberculous tissues. Our method was to inoculate a large number of glycerin-agar, potato and dog serum

tubes with quite large pieces of the infected organs (liver, spleen, etc.), and later to treat them as in the Smith method of isolating tubercle bacteria. Our efforts were successful in about one-half of one per cent of the tubes. Subcultures were not difficult to obtain. The growth varied in appearance on the different media, being greyish, fleshy, smooth and glistening on the serum, but more spreading and wrinkled on the glycerine-agar. On potato the cultures we have are slightly brownish in color, not vigorous but otherwise suggestive of the growth of the human variety on this medium.

Guinea pigs of about 900 grams weight were inoculated July 19, 1903, some subcutaneously and others into the abdominal cavity, with 1 and 2 cc. of a suspension of the crushed tuberculous livers. At the end of five weeks no evidence of disease could be detected in the living animal.

September 25th, a guinea pig inoculated subcutaneously was examined. It had gained in flesh, and showed no evidence of tuberculosis.*

Adult hens were inoculated with similar quantities of the suspension into the subcutis and others were fed with tuberculous livers. Two hens were inoculated subcutaneously with pieces of the skin containing tuberculous lesions. One of the inoculated fowls died in forty-six days with generalized tuberculosis together with tuberculous lesions at the point of inoculation. The others are alive at this writing.

Differential Diagnosis.—From the symptoms it is evident that it is impossible to differentiate this disease from certain other affections, such as lymphadenoma and sarcoma of the liver, asthenia, nodular taeniasis and the disease caused by the air sac mite (*Cytodites nudus*).† Because of a close similarity in the general symptoms, and, in certain cases, of the gross lesions, between tuberculosis and certain other affections, the findings of a somewhat careful examination is necessary to warrant a positive diagnosis. In the living fowl it seems as yet to be impossible

*Since the preparation of this paper the other guinea pigs have died, but they did not exhibit any lesions of a tuberculous character.

†We examined two fowls that exhibited every objective symptom of tuberculosis, to find the organs normal in appearance, but the air sacs contained very large numbers of the mites. Dr. W. L. Williams described the disease produced by this parasite in *Am. Vet. Review*, April, 1898.

to fix upon any diagnostic symptoms. At post-mortem, however, properly stained cover-glass preparations from the tubercles have, in our experience, invariably revealed the presence of tubercle bacteria. This renders the positive diagnosis in the dead fowl a comparatively easy task.

It has been stated that tuberculous fowls react to tuberculin. We have tried this on a few cases, but with questionable results, although in most of the tested fowls there was a rise of temperature of from one to two degrees. The elevation began in about four hours, and continued from two to four hours, when it sub-

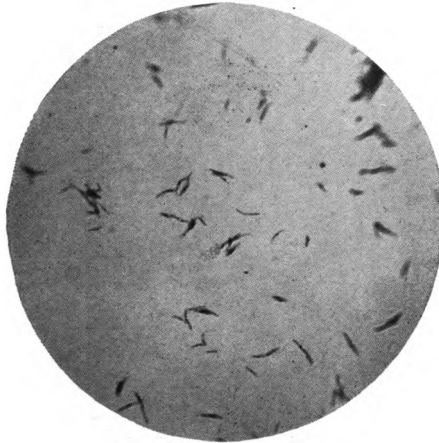


FIG. 8.—AVIAN TUBERCLE BACTERIA.

Cover-glass preparation from a four-weeks glycerine-agar culture. It shows the organisms singly and in clumps. A few show a beaded structure, and larger, darker stained granules appear in others.

sided. In no case, however, has this possible temperature reaction exceeded the normal limits. In several cases, where a rise over the initial temperature of two degrees, but not in excess of the supposed normal temperature, was attained, the fowls were carefully examined post-mortem with negative results. The quantity of tuberculin given subcutaneously varied from 0.2 to 1 cc. (equivalent to .01 to .125 cc. of Koch's lymph). In a few cases we gave as much as 2 cc. When the dose was 0.5 cc. or more, the fowl showed some depression. We used tuberculin made from the human variety, but as soon as possible we shall try tuberculin prepared from the avian organism.

In the flocks where we have found this affection the number of fowls that have been exposed is so large that it is desirable to find if possible some means of detecting the diseased birds. The destruction of the thousands of adult fowls that have been exposed would mean heavy financial loss to many poultry raisers. This, however, may be found to be the only measure for eradicating the disease. At present it is proposed to remove from the infected flocks all the fowls who give evidence of not being thrifty, disinfect the houses, and as far as possible put the remaining fowls in uninfected yards. The facts at hand suggest that this disease is very slow in its development, which increases the

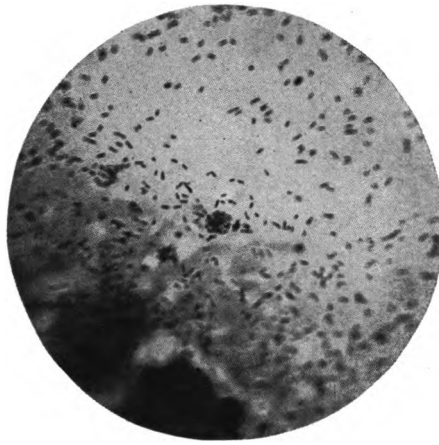


FIG. 9.—AVIAN TUBERCLE BACTERIA.

A cover-glass preparation from a tubercle from the liver of Fowl 51. It shows bacteria and two masses composed very largely of these organisms. The bacteria are shorter and thicker than those from the culture preparation. (Fig. 8.) Taken with a 1.5 mm. Zeiss apochromatic lens, and ocular No. 4. Fig. 8 is magnified slightly more than Fig. 9.

difficulty of detecting the newly infected fowls. The results obtained in eradicating the disease will be given, and the methods found to be most efficient will be described in a future bulletin from the California Agricultural Experiment Station.

The source of infection has been suggested to be the eating of sputum of tuberculous people. Thus far we have not found any evidence to support this hypothesis. The attendants of the worst infected flocks assure us that tuberculosis has never existed in any person caring for the fowls or in those coming in con-

tact with them. It has also been suggested that the disease was introduced with tuberculous meat that had been given to the fowls for food. Many old horses are fed to the poultry in this locality, but it has not been supposed that they were tuberculous. While we cannot offer, at this time, any suggestion concerning the source of the first infection, the evidence is quite conclusive that, when the disease is once introduced, the infection spreads in the flock by means of the dissemination of the tubercle bacteria through the digestive tract.

We wish to acknowledge our indebtedness for the photographs to Mr. B. F. White, of the University of California, and Dr. S. H. Burnett, of the New York State Veterinary College.

DISCUSSION.

DR. WHEELER: I would like to ask Dr. Moore a question in regard to temperature. It has been my experience in taking the temperature of fowls that it was a very poor guide to the morbid condition of the animal. The temperature seemed to be no clue at all. I have frequently studied the range of temperature in fowls, and got anywhere from 102 to 107 degrees, where, as far as I could tell, the fowls were in a perfectly normal condition. I would like to ask Dr. Moore if he has done any experimenting in the way of trying to determine the normal temperature in fowls.

While I am on this point, an incident occurred in my own experience, and I do not expect to have much more opportunity for investigating tuberculosis. I believe some work has been done to try to establish characteristic thermic lines for the reaction of tuberculin. I had occasion about eighteen months ago to see a reaction in a bull that had just returned from the show circuit. It had been tested before that, without a reaction. On the day after the inoculation the bull's temperature went up to 107. I also found a tick on the bull, and was in a quandary to determine in my own mind whether the elevation of temperature was due to tuberculosis or Texas fever. On the following day I took a series of temperatures, and although the maximum temperature was not as high as on the second day, still it went up, as I remember, to

about 105, and on the subsequent day to about 104. I also tried the same thing in several other animals which had been under the same conditions, upon their return from the show circuit, and the reaction received on the second and third day, gradually falling off. I would like to ask some of the gentlemen present, while on the subject of temperatures, if they have ever met with that same experience. Of course, we commonly drop the taking of the temperature after the second day—the first day after the inoculation. I would like to know whether or not this might not be of some aid to us in determining the thermic lines of the action of tuberculin.

DR. LAW: In reference to this matter, I recall the case of the Levi P. Morton herd of Guernseys. The animals were tested with tuberculin, and the reacting animals had their temperatures taken daily, or twice a day, thereafter, for a month or more, and it was found that there were ups and downs in the temperatures for that length of time in these animals that did not appear in the healthy animals. Whether it was due to the recrudescence, so to speak, of the tuberculin, or whether it was that, there having been given an impetus to the tubercle bacilli, I won't pretend to state; but the fact remains that it was shown by very careful observation, day by day or twice a day, that the temperature varied in a way that it did not do with the healthy cattle. It rose abnormally at intervals for at least a whole month.

DR. MOORE: In answer to the question in regard to the normal temperature of a fowl, I would say I do not think we know exactly what it is. Some years ago in working on cases of an infectious disease I took the temperature of a large number of fowls, and found it to range from 104 or 105 to 108.^o I do not mean to give the impression that we took the temperature of these animals to determine whether there was indication of tuberculosis, but simply to find out if there was any change in the temperature of the fowls. This point has another bearing. It is very desirable, in the particular locality to which I referred, that the tuberculous fowls be separated from the uninfected, if possible. There are many diseased fowls in certain large flocks, and how are they to be detected? We tried to confirm the observations of Nocard that chickens suffering from tuberculosis would respond to the tuberculin test, in

which we found the initial temperatures, as I stated, to vary from 102 to 107 or 108.^o We found that the morning temperature was usually lower, and that after the tuberculin injection we got a gradual rise,—a tuberculin curve, corresponding very closely to that usually observed in cattle; but it occurred very early, and the rise of temperature did not exceed the temperature that we found in healthy fowls later in the day. Consequently I do not consider the tuberculin reaction to be of any value whatever, as a diagnostic agent. I shall very soon have a series of observations made on a number of supposedly healthy fowls, in which the temperature will be taken for a number of days, and at intervals of two or three hours, in order to determine the normal range of temperature.

I have had one or two opportunities to make observations on animals which are somewhat in line with those Dr. Baker has suggested; namely, the slaughter of animals after the tuberculin test. In these cases, the killing did not take place until considerable time after the test. In all of the cases, with one exception, the lesions were found to be chronic, and there was no indication that they were excited or irritated by the effect of the tuberculin.

DR. ELLIS: I did not have the opportunity to hear all of Dr. Moore's paper yesterday. There is one point which I would like to know if he touched upon. Did he find any bacilli in the eggs of any of the chickens?

DR. MOORE: We have not extended our investigations quite to that point. We have considered it, but it is a question of technique as to how it can be done. In one case we found a number of tubercles in the ovary, and in another case we found an egg about to be laid in a fowl, that was extensively infected with tuberculosis.

DR. BAKER: Dr. Wheeler's question and Professor Law's answer recall to my mind the history of Koch's tuberculin in human practice. He announced it as a curative agent, but it was recognized within a short time thereafter that it aggravated the disease,—produced an active development of what were perhaps latent lesions. I would like to ask if any of the gentlemen present who have been carrying on investigations with tuberculin have found that its injection did excite the lesions to more rapid development.

This paper of Dr. Moore was particularly interesting to me. The symptoms he mentions make it comparatively easy to determine the difference between a healthy and a tuberculous chicken. I think that, as veterinarians especially, it would be well for us to instruct our wives to study the chicken *post-mortem* before it goes into the pot.

DR. BAKER: I understood him to say yesterday that there were upwards of twenty-nine to thirty-five per cent of the chickens affected. Have we any reason to suppose that the chickens in the locality he speaks of are in any worse condition than the chickens in our own neighborhood. Tuberculosis is generally distributed over the civilized world, and if the chickens in Dr. Moore's neighborhood are affected, why is it not possible that they are also affected in my neighborhood? Or possibly the doctor may have been sowing bacilli of tuberculosis in his community, and the chickens there get infected.

DR. MOORE: Excuse me for speaking again, but I did not wish to give the impression that I had found tuberculosis to be very generally distributed. I said that it was very common in certain flocks. There is only one community in which it has been found by myself, although there are a number of places from which it has been reported. The diagnosis in every case, as far as I know, is still in doubt, with the exception of the one at the Oregon Experiment Station.

DR. LAW: I would like to say a word on that subject. The fact that this disease has not been found generally among chickens in the United States is strong evidence that it is not very generally prevalent, and whatever may be said of the transformation of the avian tubercles into the bovine, and the bovine into the avian, we know it does not take place very readily. For a long time that was the stronghold of the theory as to the distinction between the two forms. As regards the prevalence among chickens that are kept in a close poultry house, it is simply the repetition of what we see every day in close dairy houses. The closer the building, and the more it is crowded, the greater the opportunity for infection. Hence, it is a very common experience with all of us to find, in a given county or town, or even among a little group of farmers, the cattle literally rotten with tuberculosis, and in the next one, not so far off and with no intercommunication, we find none at all. So it will be with chickens.

DR. HOSKINS: I would like to ask Dr. Moore whether in the California outbreak there was any evidence to show that it was human tubercle bacilli that had been transformed into the avian, in view of the prevalence of tuberculous patients on the Pacific coast. Hundreds of people who go there for their health seek employment along these lines.

This disease is quite common among pigeons. I have a brother who has been a breeder of fancy pigeons for many years, and has had many cases where the loss was very severe indeed. The external forms seem to be more common, often affecting the heads and wings of the pigeons. The birds are unable to fly from the floor or ground, and if they started to fly to a given point they may arrive at a point directly opposite to that for which they started when the head is affected. Often it will cause the wing to droop, which makes the bird less valuable for show purposes. Dr. Moore's paper was a very interesting one to me, and I consider it a valuable contribution, because the values that are to-day represented in the pigeon industry in this country for show purposes are very considerable. It is not uncommon to get as high as one hundred to one hundred and fifty dollars apiece for these birds.

This problem must soon reach us in a practical way. I would like to repeat that question as it applies to pigeons, because so many people in poor health and so many tubercular people go into pigeon raising, because of its profit and because it requires no great amount of hard labor. These people spend a good deal of time in the pigeon lofts, and naturally they expectorate over the floor, and it is a very common practice to see the pigeons immediately gulp down the expectorated matter.

DR. MOORE: In answer to Dr. Hoskins I will say that, in a particular flock where we found most of this disease, we were unable to find any evidence of this kind whatever. There is a rumor that this condition obtains in the southern part of the state, around Los Angeles. But thus far I have not seen this disease in chickens from that locality; although the health officer, Dr. Powers, told me that he had frequently seen it. But he had diagnosed it from the gross lesions. The place where we found the disease was in a locality north of San Francisco, where tuberculous people do not go for the benefit of their health.

There have been a number of statements to the effect that chickens do contract tuberculosis by the method suggested by Dr. Hoskins for pigeons, but we were unable to find any evidence that such was the source of infection in these flocks. But the disease spread as Dr. Law suggested. Intestinal lesions are very common and in those cases the intestinal contents contain large numbers of tubercle bacteria. The question that Dr. Hoskins raises is a very important one.

DR. LAW: May I say a word more on this subject of the external form in pigeons? I would simply recall the fact that tuberculosis has been found to be very prevalent in different localities in house-birds, and particularly in the acute form. In these cases it is found to be more nearly identical with the tubercular bacilli of man. There is less variation.

THE EFFECT OF CERTAIN DRUGS UPON BLOOD PRESSURE AND CARDIAC INHIBITION IN THE HORSE.

PIERRE A. FISH, ITHACA, N. Y.

The more a man knows of his tools, the better qualified is he for his work. This truism applies with peculiar force to all who prescribe medicines. Drugs are the tools with which the physician works to assist nature in overcoming abnormal conditions in the organism. Massed personal experience and clinical evidence or therapeutics stand high in determining the value of the use of particular drugs for certain pathologic conditions. Pharmacology endeavors to supply detailed facts concerning the physiologic action of drugs, and aims to supplement clinical observations with reliable data.

In the following experiments the usual apparatus for blood pressure demonstrations was employed. In all cases the carotid artery was connected with a mercury manometer, the float of which wrote its record upon a cylinder revolving at a uniform speed.

Data have been obtained from sixteen horses, two cows, one calf, one cat and a number of dogs; the special purpose being to note the effects of drugs upon the rate and force of the heart and its susceptibility to inhibitory stimuli transmitted through the vagus nerve. In nearly all cases the drugs were administered intravenously, the jugular vein being utilized in the larger and the femoral vein in the smaller animals. Chloroform anaesthesia was employed for the horses, cows and calf; morphine or chloroform with ether or chloroform for the dogs and cats.

In general an increase in the amount of blood pressure is due to an increased force or activity of the heart-beat, or an increased resistance or constriction of the peripheral blood vessels; the opposite conditions with regard to the heart and peripheral vessels cause a diminished pressure.

Inhibition means a diminution in the frequency of the heart-beat, or complete standstill—the heart remaining in diastole—according to the strength of the stimulus sent into the heart through the inhibitory fibers of the vagus nerve. Continued stimulation, however, does not produce continued inhibition, for after a variable limit the heart escapes from the control of the vagus and resumes its beating in spite of the stimulus. The vagus nerves also vary in their power of controlling the action of the heart; for in some cases while stim-

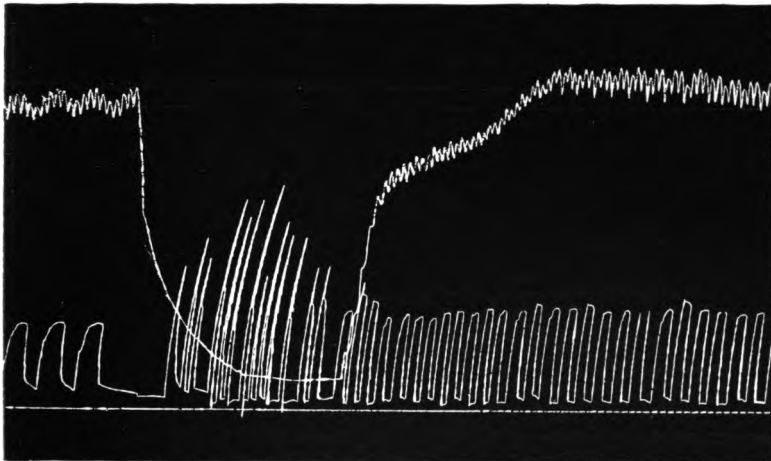


FIG. 1.—TRACINGS OF BLOOD PRESSURE AND RESPIRATION. DOG.

Effect of Vagus Stimulation. The upper tracing is of the blood pressure; the drop in the tracing occurred when the vagus nerve was stimulated. The lower tracing is of the respiration. Stimulation of the vagus had the effect of increasing the respirations. Reduced three-eighths.

ulation of the nerve on one side will inhibit the heart the same stimulus applied to the opposite vagus may actually cause acceleration. In other instances either vagus controls the heart with equal facility. The tracings represent cardiac auto-graphs, in which the heart writes its own record, strongly or weakly as the case may be.

Fig. 1 shows complete cardiac inhibition and consequent fall in blood pressure from moderate electric stimulation of the vagus nerve. The response was not immediate, there being at

least one beat before inhibition ensued. When the stimulus was removed there was again an appreciable delay before the beating was resumed. Ultimately there was a somewhat increased rate with higher blood pressure as if to make up for the time lost during inhibition. The upstrokes in the blood pressure curves represent the systole; the downstrokes the diastole of the heart. Upon respiration there was at first inhibition, followed almost immediately by increased depth and frequency and some irregularity in breathing. Upon the removal of the stimulus, the depth and frequency was still maintained slightly above the normal.

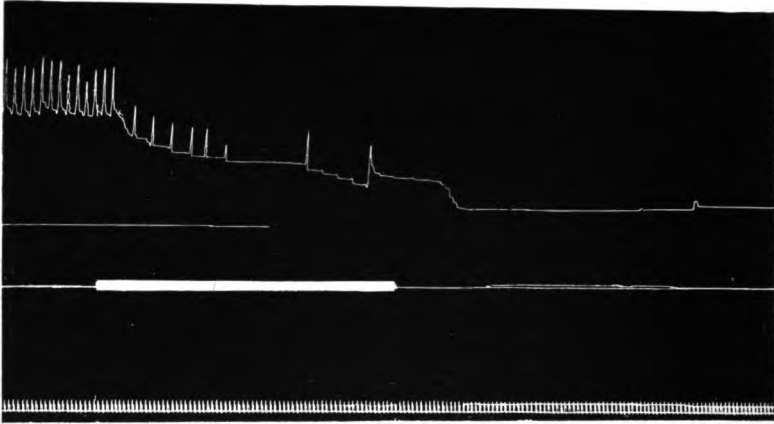


FIG. 2.—BLOOD PRESSURE TRACING. HORSE NO. 5.

Strongest Stimulus. The broad line below the tracing indicates the period of vagus excitation. The lower line marks seconds. Reduced one-half.

The tracing in Fig. 2 shows a fatal termination. Through an inadvertency the short circuiting key of the apparatus was not opened until the strongest stimulus was reached. The usual practice in the experiments was to first apply a weak stimulus and gradually lead up to the strongest. This has been done a number of times, and in such cases there has been no fatal result. As an explanation, it may be suggested that the weaker stimuli "educate" the heart to resist the vagus effect, so that it acquires to some extent an immunity against strong stimuli. Such an hypothesis, however, requires further confirmation.

It should be noted in this case that the heart showed considerable resistance to the excitation, giving three normal beats and then continuing to beat with diminished force and frequency while the blood pressure fell gradually. The stimulus was applied for seventy seconds. When this was removed the blood pressure continued to fall slightly. After about seventy seconds more the heart gave one abortive beat, when death ensued. The cylinder was allowed to revolve its whole circumference (about eighteen inches), and the floater showed a continued but almost imperceptible decrease in blood pressure.

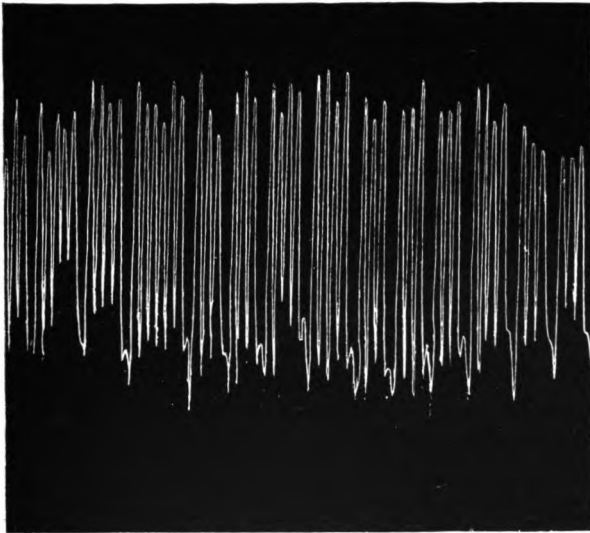


FIG. 3.—INTERMITTENT PULSE. HORSE NO. 8.

Blood Pressure Tracing. Natural size.

An abnormal condition not infrequently encountered is an intermittent and irregular pulse. The tracing shows the missing beats at more or less regular intervals and that there is usually an abortive attempt to beat, which, however, is too slight for the finger to detect.

In this experiment a single electrode was placed upon each vagus, and the stimulus sent through both nerves simultaneously. Blood pressure is considerably lowered, with diminished fre-

quency but increased amplitude in the heart beat. The result is much the same as when a pair of electrodes is placed upon the single nerve.

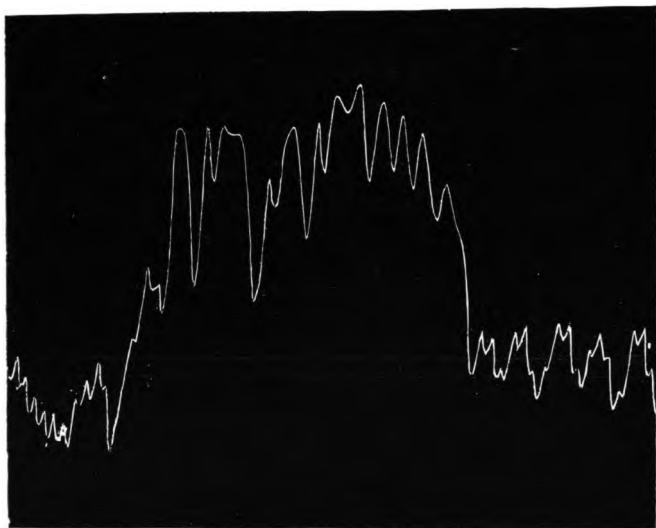


FIG. 4.—BLOOD PRESSURE TRACING. CALF NO. 1.
Moderate Stimulus to Vagus Nerve. Natural size.

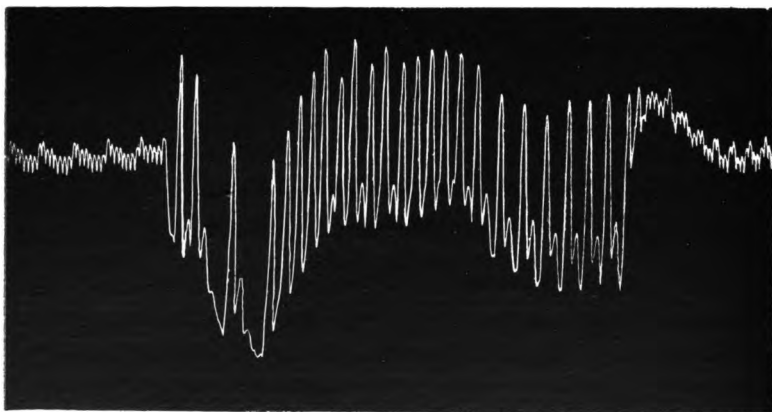


FIG. 5.—BLOOD PRESSURE TRACING. COW NO. 1.
Moderate Stimulation of Vagus Nerve. Reduced one-half.

This cow was tuberculous. The heart was slow to react to the stimulus, giving eight beats before the blood pressure

fell. The decrease in frequency is very great, but the enormous increase in the amplitude of the heart beat during the period of stimulation is remarkable. Shortly after the removal of the stimulus the blood pressure rose, but soon returned to normal.

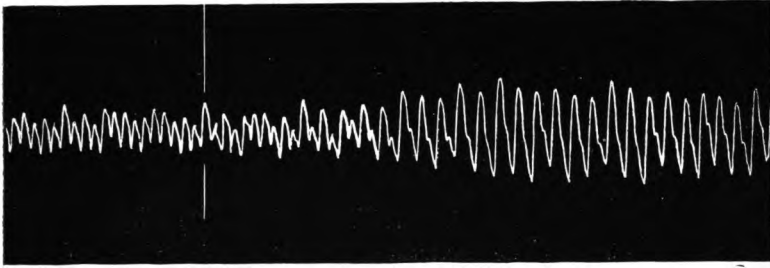


FIG. 6.—BLOOD PRESSURE TRACING. COW NO. 1.
Effect of Eserine Upon the Heart. Reduced one-eighth.

Three grains of eserine sulphate were injected into the right jugular vein at the point on the tracing indicated by the vertical line. The effect was to soon slow the action of the heart, but to increase the force of its beat. In general the

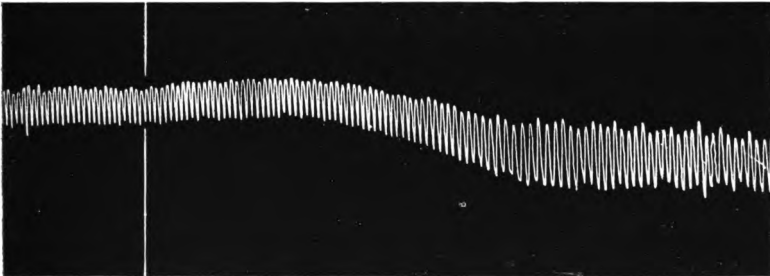


FIG. 7.—BLOOD PRESSURE TRACING. HORSE NO. 16.
Effect of Nitroglycerine Upon Blood Pressure. Reduced three-sixteenths.

force of the beat is measured by the vertical distance of each individual curve and the frequency by the horizontal distance between each curve. Eserine exerts a direct stimulating action upon the cardiac muscle independently of the vagus nerve.

One grain of nitroglycerine was injected into the left jugular vein at the point indicated on the tracing. The blood pressure fell gradually with decreased frequency but increased am-

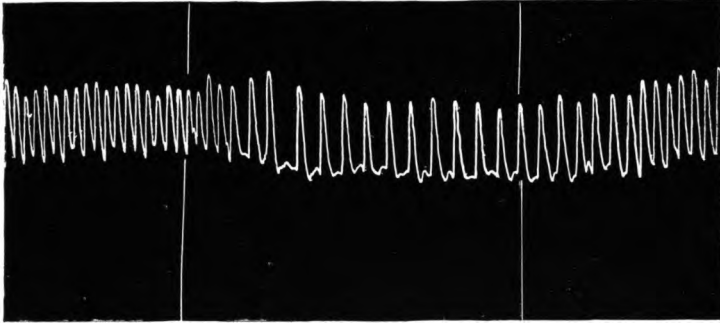


FIG. 8.—BLOOD PRESSURE TRACING. HORSE NO. 16.

Strong Stimulus Applied to the Left Vagus after the Injection of Nitroglycerine. The distance between the two sets of vertical lines shows the period of vagus stimulation.

plitude of the heart beat; this effect being brought about by the paralyzing action of the drug upon the vaso-motor mechanism. The peripheral as well as the central mechanism being affected.

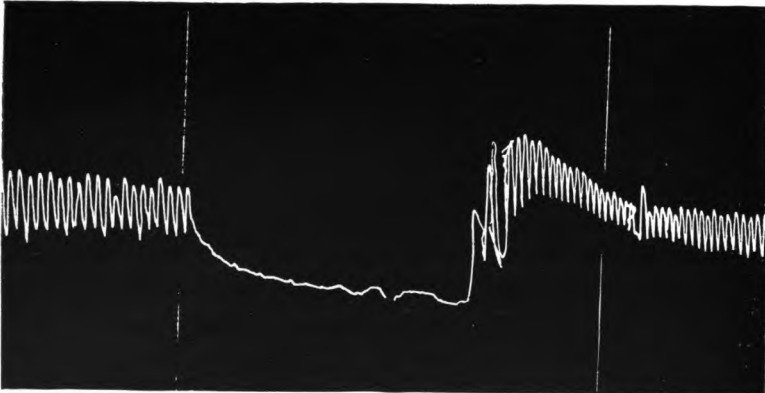


FIG. 9.—BLOOD PRESSURE TRACING. HORSE NO. 16.

Strong Stimulus to the Right Vagus after Nitroglycerine. The two sets of vertical lines indicate the period of vagus stimulation. Reduced one-sixteenth.

After the effect of the nitroglycerine was apparent a strong stimulus was applied to the vagus nerve of the left side for

twenty-eight seconds. The principal action is the slowing effect upon the rate, which was maintained for a short time after the stimulus was removed. There is a slight fall in blood pressure, the amplitude of the beat being practically the same throughout. Nitroglycerine tends to paralyze the vagus center as well as the vaso-motor, and a mild stimulus produces practically no marked effect upon the heart beat.

In this experiment the same strength of stimulus was sent into the right vagus as had just previously been sent into the left, and illustrates the difference in susceptibility of the vagus nerves in their control of the heart. Although there is a fall in blood pressure, there is not complete inhibition, as the

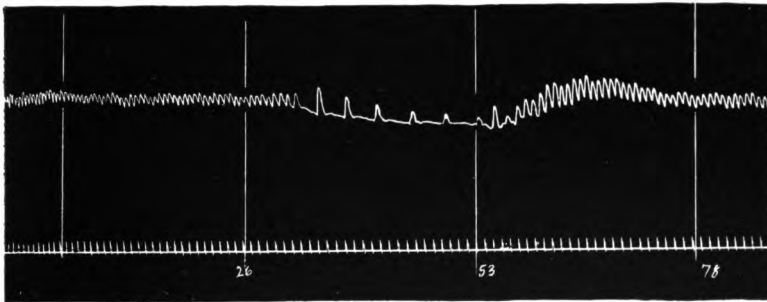


FIG. 10.—BLOOD PRESSURE TRACING. HORSE NO. 16.

Nitroglycerine Experiment; Stimulation of Both Vagi. The distance between the first and last vertical lines represents the long period of stimulation (right vagus). Between the second and third verticals, the period of short stimulation (left vagus). Reduced one-fourth.

tracing shows a number of abortive beats. The stimulus was applied for forty-three seconds, during which the heart escaped from the control of the vagus, and beat with increased force and frequency and with higher blood pressure for thirteen seconds before the removal of the stimulus.

A strong stimulus extending through a period of seventy-eight seconds was sent into the right vagus. During the first twenty-six seconds there was practically no effect upon the heart rhythm except a slight slowing in the rate. (Compare with Fig. 9.) After twenty-six seconds, while the right vagus was still being stimulated, a current of the same strength was turned into the left vagus for twenty-seven seconds. After

some delay there was a slight fall in blood pressure, with marked slowing of the heart. After the removal of the stimulus from the left vagus there was an increase in the blood pressure and increased force to the beat, in spite of the fact that the right vagus was still receiving its stimulus. The removal of all stimulation produced no apparent change in the heart beat nor in the blood pressure. The experiment was concluded by cutting both vagus nerves, without producing any material change in the character of the tracing.

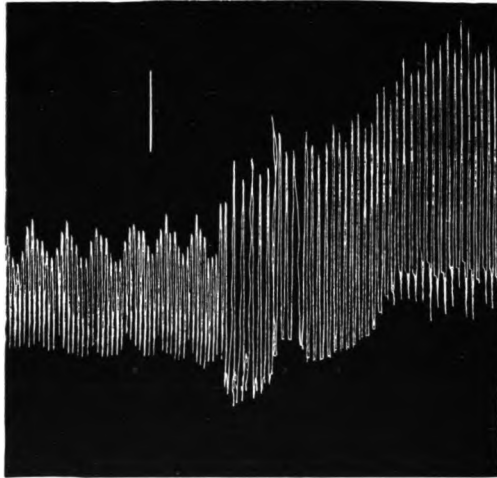


FIG. 11.—BLOOD PRESSURE TRACING. HORSE NO. 6.

Normal Pressure Tracing at the Left; Effect of Barium Chloride Shown at the Right. The vertical line above the tracing indicates the point at which the barium chloride was injected. Natural size.

Ten grains of barium chloride were injected into the jugular vein, causing a very decided increase in the force of the contraction, at the same time slowing the rate of the heart. The rise in blood pressure is also striking.

The strongest stimulus was applied for one hundred and five seconds. The response was almost immediate, as shown by the sudden fall in blood pressure. The beating of the heart was checked only temporarily; the beats, though somewhat irregular and of less amplitude, were nearly as vigorous as normal, and the blood pressure rose materially in spite of the

strong and long stimulation. Upon the removal of the stimulus there was immediate recovery, as shown by the increased frequency, and some rise in blood pressure, although the latter remained lower than the normal. Barium chloride evidently interferes with the vagus control of the heart.

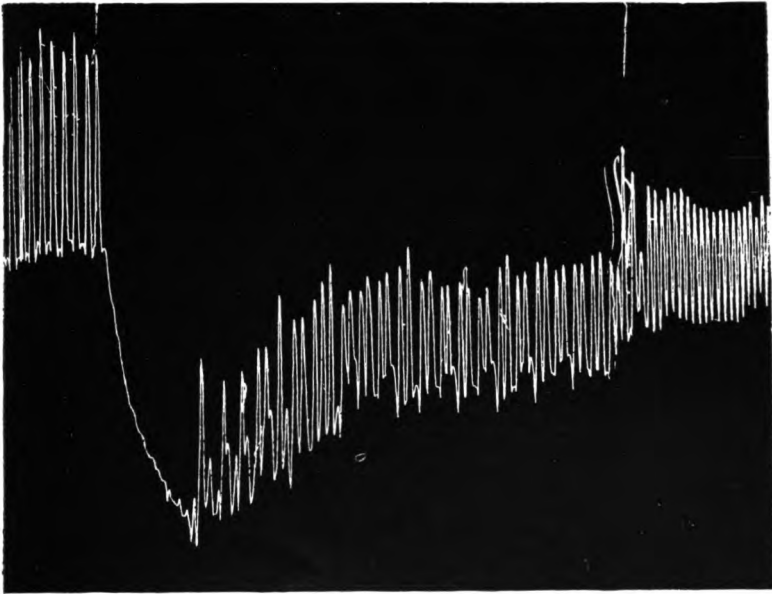


FIG. 12.—BLOOD PRESSURE TRACING. HORSE NO. 6.

Strongest Stimulus to Vagus after Barium Chloride. The vertical lines above the tracing indicate the period of vagus stimulation. Reduced one-sixteenth.

The strongest stimulus was applied to both vagus nerves for thirty-one seconds. The slow response is remarkable. There is considerable fall in blood pressure and the slowing and irregularity of the heart is marked with greatly increased amplitude in the beat, but there is not complete inhibition. The recovery from stimulation is even slower than was the response. The blood pressure rose above normal for a short time, and the frequency of the heart beat did not quite return to the original. In this experiment the barium was injected subcutaneously.

As in the preceding experiment the strongest stimulus was employed, but for a longer period (one hundred and twenty-seven seconds). There is also noted the same delay in response and recovery from the stimulation. At first there is a little irregular fall in blood pressure; but this is soon maintained at the normal, while the force of the contraction is greatly increased, but somewhat slowed. In this experiment both vagi had been cut and the stimuli were applied to the

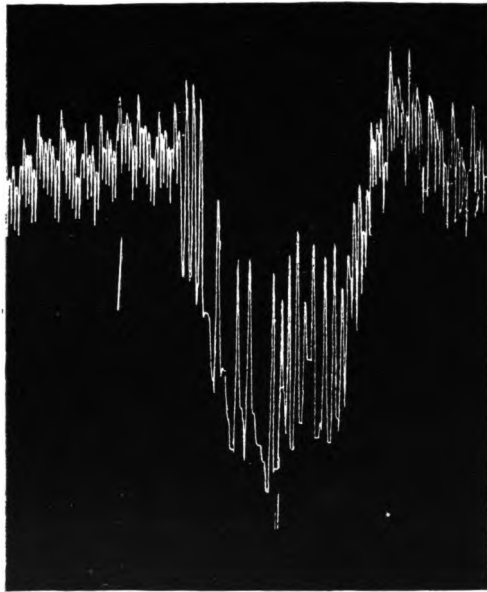


FIG. 13.—BLOOD PRESSURE TRACING. HORSE NO. 7.

Stimulation of Both Vagi after Barium Chloride. The vertical lines below the tracing show the period of vagus stimulation. Natural size.

peripheral portions of the cut nerves; the cardio-inhibitory center was therefore separated from direct connection with the heart and its influence was removed. A comparison of Figs. 13 and 14 is most interesting. In the former the vagi were intact, and the center formed a portion of the circuit; in the latter case the center was excluded, all other conditions, however, being the same. The more pronounced effect in the first case suggests that normally or under the influence of the

drug the center responds to the electric excitation, and sends inhibitory stimuli to the heart in addition to those directly transmitted by the electrodes; for in the second case, where all

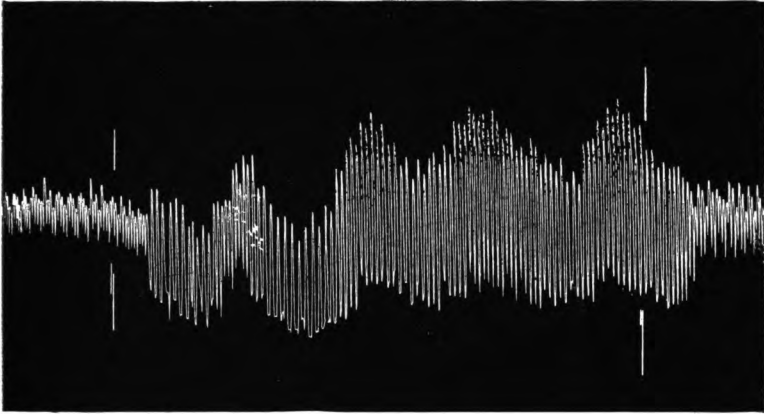


FIG. 14.—BLOOD PRESSURE TRACING. HORSE NO. 7.

Stimulation of the Peripheral Portions of the Cut Vagi after Barium Chloride. Period of vagus stimulation is shown by the vertical lines above and below the tracing. Reduced three-eighths.

of the conditions were the same except the inclusion of the center, the inhibitory effects were very much less pronounced.

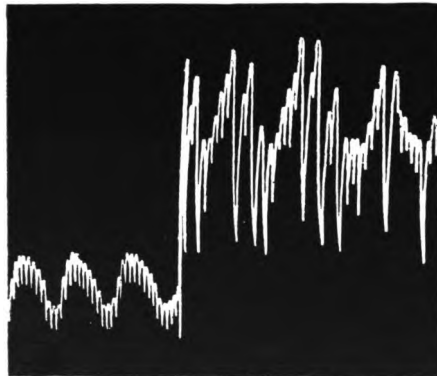


FIG. 15.—BLOOD PRESSURE TRACING. DOG.

Normal Condition at the Left and Effects of Barium Chloride at the Right.
Natural size.

The question as to the acquisition of immunity by the heart from previous stimulation, if this be a fact, may also have an application here.

In this dog one-fourth of a grain of barium chloride was administered in the femoral vein. The increase in the blood

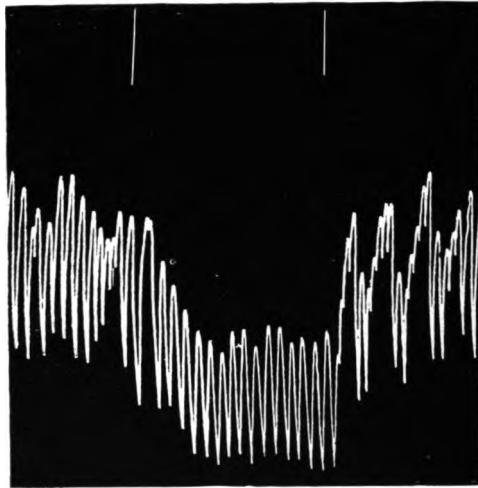


FIG. 16.—BLOOD PRESSURE TRACING. DOG.

Vagus Stimulation after Barium Chloride. The vertical lines above the tracing show the period of stimulation. Natural size.

pressure, more forcible contraction and slowing of the beat is well demonstrated.

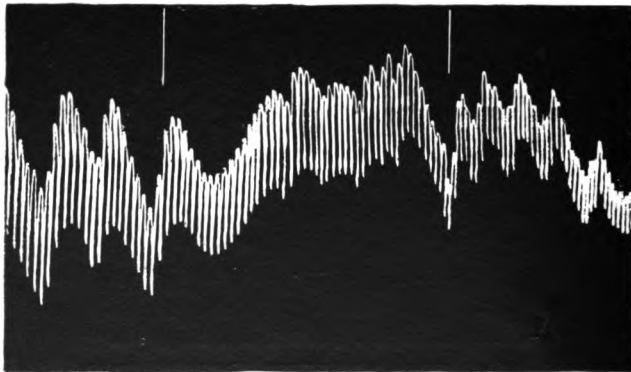


FIG. 17.—BLOOD PRESSURE TRACING. DOG.

Vagus Stimulation Between Vertical Lines after Atropine Following Barium Chloride. Natural size.

As in the case of the horse, some resistance is shown toward the vagus control of the heart. With a moderate stimu-

lus the amplitude of the beat is not much decreased, although there is a fall in blood pressure and some slowing.

The administration of atropine (same dose as barium chloride) shows an increased activity of the heart on account of the paralysis of the vagus endings. There is also an increased blood pressure, due to the greater output of blood from the heart as well as to stimulation of the vaso-motor center in the oblongata. Excitation of the vagus after atropine does not produce inhibition. In this case it caused the opposite result, producing a rise in blood pressure without any very appreciable effect upon the amplitude or frequency of the beat.

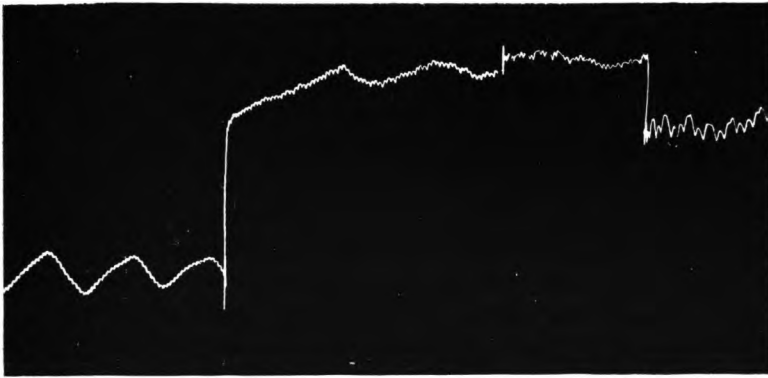


FIG. 18.—BLOOD PRESSURE TRACING. CAT.

Tracing of Normal Pressure at the Left, and after the Administration of Barium Chloride at the Right. Reduced one-half.

This cat received a very large dose of barium chloride in the femoral vein (1.7 centigrams per kilogram of body weight, or a total dose of about 5-6 grain). As shown by the tracing, the first effect of the drug was to produce vaso-constriction. The blood pressure increased in amount to seventy-six per cent above normal. In time the pressure fell a little, but was maintained at a point much higher than normal, with slowing and increased force in the contraction.

In general the tracings show an important effect of barium chloride upon the heart and circulation. The resemblance to digitalis in these respects is very marked, and is extended also to its diuretic effect. In an experiment upon a dog it

was observed that the flow of urine through the ureters and collected in a graduate exceeded the normal volume considerably in a given time. The diuretic effect of barium chloride as well as of digitalis is undoubtedly due to the action of the drugs upon the blood pressure in the kidneys.

Loeb has shown that the barium ion exercises a stimulating effect upon protoplasm, especially all forms of muscle tissue. The results of the foregoing experiments would indicate that the barium, by stimulating the cardiac muscle directly, enables it to resist, within certain limits, the vagus control.

The increase in blood pressure is effected by the vaso-constricting action of the salt, possibly by its direct action upon the muscular tissue of the vessels. The increased force of the heart beat should also be considered a factor. The slowing of the heart would indicate that barium chloride also has a stimulating effect upon the vagus mechanism.

Dr. Schedel of Nauheim, Germany (*Deut. Med. Woch.* xxix No. 13), experimenting upon himself, observed the effect of barium chloride upon the heart and circulation. After obtaining his normal pulse and blood pressure by the use of a sphygmograph and tonometer, he found that, taking one-third of a grain of the salt twice daily, two hours after the principal meals, the effects were produced two hours later. These effects were a fall in the pulse rate, an increase of 10 mm. in the blood pressure, and greater amplitude of the pulse curve. There was still some effect of the drug three days after it was discontinued.

In another experiment, where three-fourths of a grain was taken twice daily, the results were the same, except that the blood pressure increased 30 mm. in amount.

Clinically the drug was used upon nineteen patients, some suffering from organic heart disease and others with lowered blood pressure resulting from such diseases as pulmonary tuberculosis, leukemia or chlorosis. Doses of one-third grain or one-half grain, twice daily, caused considerable improvement, the pulse becoming regular, full and slower, the grave symptoms disappearing with the rise in blood pressure and free diuresis. The increased blood pressure did not last longer than three days, but the general improvement and the strengthened pulse persisted for eight days.

Dr. Schedel concludes that the indications for barium chloride are the same as those for digitalis, and that small doses do not disturb the digestive functions.

It would appear from the data already given that the veterinarian will probably find in barium chloride, with proper dosage, a valuable drug in animal therapeutics, aside from its use in producing purgation, where doses bordering upon toxicity are required.

TUMORS IN DOMESTICATED ANIMALS.*

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The following is a description of some of the tumors that have been forwarded for laboratory investigation:

Specimens from chief inspector of stock, received Oct. 9, 1901, Laboratory No. S. A. 92. These specimens were hard cystic tumors of the skin, taken from the junction of the throat and neck of some fat cattle that were seized at the city sale yards. The cattle were in prime condition. They were bred in the north, and for a short time previous to being submitted for sale were pastured in the southeast.



FIG. 1.—SEBACEOUS HORN.

Taken after the specimen was cut through the center.

The tumors were spheroid in shape, about the size of a breakfast cup, sessile, and appeared to grow outwards from the skin. The outer surface was hard and horny, and so tough that a surgical saw had to be used to bisect the specimen. (See Fig. No. 1.)

In the center of these tumors small irregular cavities were found, which were lined with a thin layer of creamy pus. (See Fig. 2, Photo No. 2.)

In one case only did a lesion extend deep down under the normal tissue. This was in the largest tumor, where a small cavity containing pus was found in the tissues under the skin. (See Fig. 2, "A," Drawing No. 1.)

*Read by title, the author being absent.

The pus from these tumors was examined with the microscope for Koch's bacillus of tuberculosis, but with negative results. Guinea pigs were inoculated, and when killed two months afterwards were found to be free from any disease or ill effects of the inoculation. Bacteriological cultures were made, and a streptococcus was found.

These specimens must be classed as cutaneous horns, and in the description of the following horny growths I will adhere to the classification given by Mr. J. Bland Sutton, F. R. C. S., in his work, "Tumors, Innocent and Malignant." Horns growing from the skin of animals are of four varieties, viz.:

1. *Sebaceous Horns*, the subject of our present study, in which a cyst is found at their base. (See Fig. 2, Photo No. 2.) Sections from the base of these specimens were prepared for microscopic examination, and the following layers were found. (See Fig. 2, Drawing No. 1.)

2. *Wart Horns*. (See Figs. 3 and 4.) This specimen is from the cheek, near the angle of the mouth, of an aged cow, and has been in my collection of specimens for thirteen years. These tumors are not uncommon on the skin of bovines. They are very vascular, and are commonly known as "blood warts."

3. *Hoof Horns*, from an overgrowth of the hoofs of ovine and bovine animals. These conditions are common in sheep, while they are uncommon in cattle. I have secured specimens of this abnormal condition, with the following history: An aged cow in this state, well bred, fat, and a deep milker,

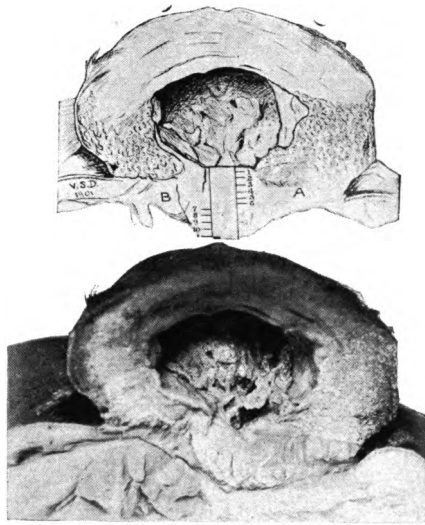


FIG. 2.—SEBACEOUS HORN.

Drawing No. 1: A, small abscess under the skin; B, small gland; 1, pus cells and mast cells, as found in chronic inflammation; 2, dense fibrous tissue; 3, layer of loose fibrous tissue; 4, dense fibrous tissue; 5, layer of loose fibrous tissue; 6, fat; 7, fibrous tissue; 8, fat; 9, dense fibrous tissue; 10, loose fibrous tissue; 11, developing blood vessels.

Photo No. 2.

in which all the hoofs were affected and of a great length. (See Fig. 5.) This animal did not use the sole or toe of the front feet in walking or standing; all the weight was on the heels, while the toes were turned upwards. This animal could only be moved with great difficulty, and was in great pain on account of those delicate structures, the laminae in the hoofs, being diseased. Since the animal was otherwise healthy, I advised that she should be slaughtered.

The legs were secured for examination, and the following is their description:

Near fore leg: Hoof, eight inches long; the upper portion, outer view, had a deep irregular cleft, which was discharging



Fig. 3.

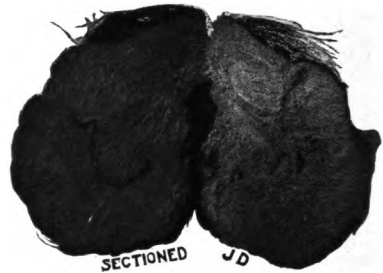


Fig. 4.

WART HORNS.

Fig. 3 shows the appearance it presented on the animal, including the upper part where it was attached to the skin. On the upper third, two hard, horny outgrowths of a flaky nature are to be seen.

Fig. 4 is a photograph of the inner surfaces of the sectioned tumor, and demonstrates its variety, i. e., the absence of a cyst at the base.

pus. The hoof was removed, and the lamina was prepared for microscopic examination, and found to be affected with suppurating laminitis.

Off fore leg: Hoof, eight and one-half inches long, and in much the same condition as the near fore foot.

Near hind foot: Six inches long. The wall was not ruptured, still the irregularity of the hoofs denoted that great structural changes had taken place in the deep structures.

Off hind hoof: This measured eight inches, and the appearance was identical with those in the other hind foot.

4. *Cicatrical Horns*, the seat of brand scar, the result of branding the skin of cattle too deeply. In Mr. J. Bland Sutton's work, above mentioned, he says: "Horns growing in

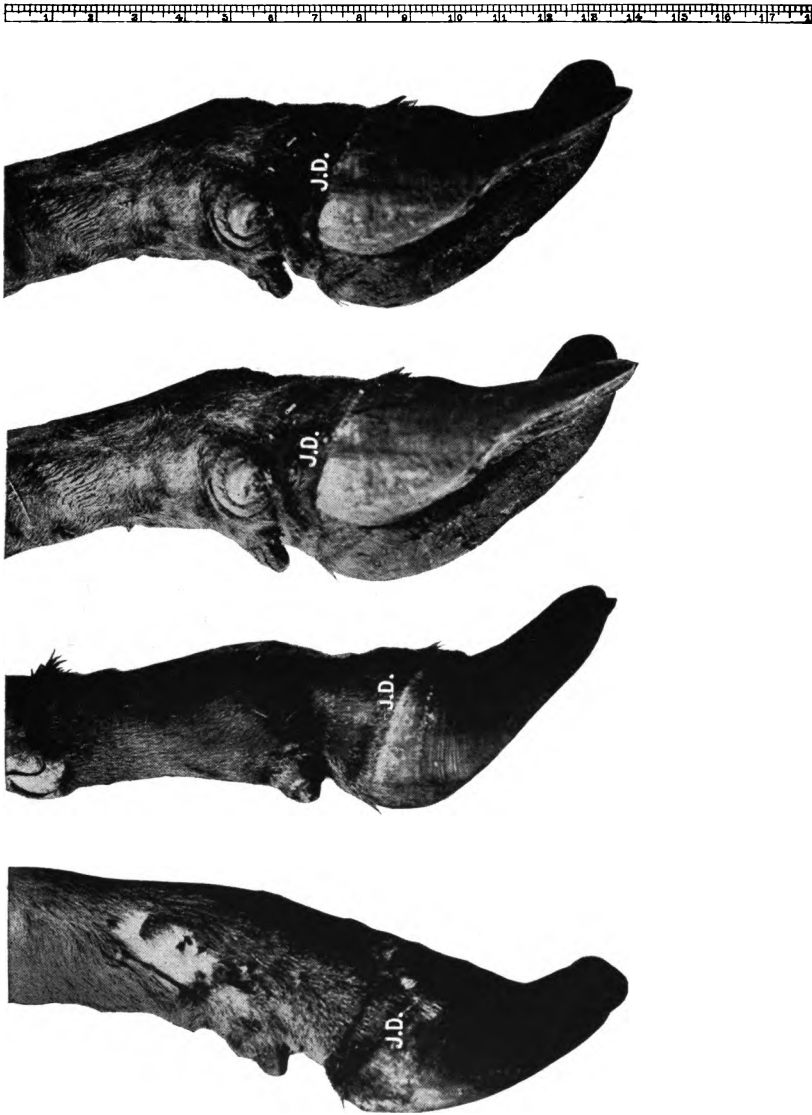


FIG. 5.—HOOF HORNS.

Beginning above: Left forefoot, right forefoot, left hindfoot, right hindfoot.

the cicatrices of burns are very rare. In Australia, where fire branding of cattle is the rule, it is not uncommon to find horns growing in cicatrices caused by the hot branding iron.



FIG. 6.—CICATRICAL HORN.

Horny growth of "Brand Scar."

The following is a description of a typical case: An aged cow was found with a fungating mass (see Fig. No. 7), on the left rump, the seat of a deep brand. This mass was vascular, and gave off a vile stench. These growths are known locally as "brand cancer."



FIG. 7.—CICATRICAL HORN, OR
"BRAND CANCER."

After careful examination the os sacrum was found to be involved, and slaughter was advised. A post-mortem examination was made, and the following noted: Os sacrum involved. (See Fig. 9.) Liver contained an abnormal growth, which, when examined microscopically, was found to be an angioma,

while the fungating mass was found to be an epithelioma. (See Fig. 8.) These lesions are prone to the development of epithe-

lial cancer, of which we have reported on many specimens during this year.

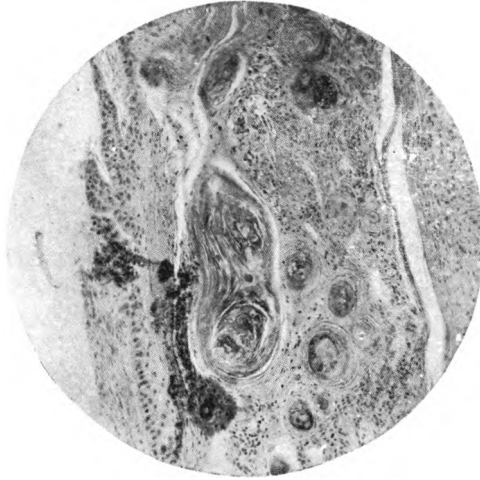


FIG. 8.—PHOTOMICROGRAPH OF CICATRICAL HORN. FIG. 7.
An Epithelioma.

S. A. 94, specimen from a horse, secured by Inspector T. H. Williams of the stock department (see correspondence attached) :

LABORATORY OF THE GOVERNMENT VETERINARY SURGEON.
ADELAIDE, 16th October, 1901.

SIR: *Re* the specimen from Inspector T. H. Williams, which you forwarded last month for examination, I shall be pleased to get the fullest particulars.

This specimen is of great value, as it opens up new work in human and veterinary pathology.

With respect, yours obediently,

J. DESMOND,
Government Veterinary Surgeon.

C. J. VALENTINE, ESQ., J. P.,
Chief Inspector of Stock, Adelaide, S. A.

STOCK & BRAND'S OFFICE,
MOUNT GAMBIER, 21st October, 1901.

SIR: I have the honor to state for the information of Veterinary Surgeon Desmond that the stallion from which the specimen was removed was about fifteen years old, and had been at Meningie about five years. About twelve months ago the beast began to lose vigor, and shortly after the right testicle was noticed to have enlarged. The horse gradually lost condition, and was just a skeleton when I saw him. He had lost the power of his hind limbs. As the owner had decided to destroy, I asked to be allowed to make a post mortem.

On opening the carcass the mass of diseased tissue was found about the kidneys and extending into the pelvic cavity. The growth was firmly attached to the spine between the kidneys. The whole mass, including the diseased testicle, was removed and sent to you.

A careful examination was made of all the other organs of the body, but no trace of disease could be found.

I have the honor to be, sir, yours obediently,

T. H. WILLIAMS.

Inspector of Stock.

C. J. VALENTINE, ESQ.,

Chief Inspector of Stock, Adelaide, S. A.

This specimen was the enlarged left testicle, and a large nodular tumor from the pelvis of an aged stallion, the whole weighing about thirty pounds. (See Fig. 10.)



FIG. 9.—OS SACRUM.

Note involvement of this bone in connection with Figs. 7 and 8.

The testicle measured five by ten inches, and weighed five pounds. It was nodular, and when cut into was found to contain a cavity, the contents of which were breaking down.

The nodular growth in the pelvis was very irregular in shape, and it involved the genito-urinary organs. This part of the specimen was found to be secondary to the disease of the testicle.



FIG. 10.—ENLARGED TESTICLE AND PELVIC TUMOR.

1. testicle; 2, kidney; 3, nodular tumor.

The following is a naked-eye description of the specimens: The testicle was very nodular, and about three times the normal weight; the tunics were adherent, and enormously thickened; the blood vessels were much distended, and in the

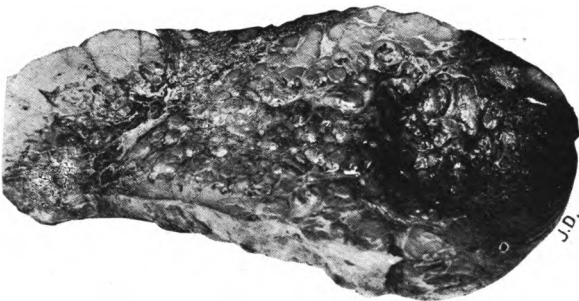


FIG. 11.—SECTION OF TESTICLE, FIG. NO. 10.

posterior extremity a cavity was found, two inches in diameter, with very irregular walls, containing a quantity of dark, semi-fluid, broken-down tissue. The growth from the pelvis was firm in consistency, and very nodular, the nodules

varying in size from a marble to two clenched fists. When these nodules were cut into they were found to consist of a dense capsule, surrounding a firm and glistening structure, which contained paths of what appeared to the naked eye as connective tissue.

Sections were prepared for microscopical examination, and the following found: Small sarcoma-like cells; epithelioid cells, resembling cells found in myeloid sarcoma; sarcomatous cells, forming the bulk of the tumor at this part; fibro-cellular trabeculæ, with round-celled infiltration.

An artery cut longitudinally showed proliferation of its endothelium, and epithelioid and sarcomatous cells in its interior; a clump of sarcomatous cells in a space in the muscular coat of the wall of the artery; and sarcomatous cells occupying lymph spaces in the false capsule of the tumor.

Lymph spaces lined with endothelial cells were found in many parts of the capsule, and this gave the key to its pathological position among tumors—endotheliomata.

This is the first time this class of tumors has been found in animals. Dr. J. M. Carter, V. M. D., says, in his able article on tumors, in the *Veterinary Archives*, Vol. XXII., 1901, page 700: "Endothelioma, a tumor of purely endothelial origin, is found only on serous membrane. It closely resembles cancer. Has never been seen in domesticated animals."

AN OUTBREAK OF EPIZOOTIC ENCEPHALITIS OF THE HORSE IN SOUTH CAROLINA.*

G. E. NESOM, CLEMSON COLLEGE, S. C.

Most veterinarians are familiar with the fact that this disease has prevailed in the South for over fifty years, and has been especially severe in the South Atlantic States during the past five years. It has been diagnosed by a number of names, all the way from rabies to sunstroke, but most farmers still insist that it is nothing but "staggers." Some veterinarians still speak of it as cerebro-spinal meningitis, but when we consider the pathology of the disease the name epizootic encephalitis or leuco-encephalitis comes much nearer expressing the nature of the lesions.

The disease seems to be somewhat erratic, in that it appears in certain sections in the form of an epizootic outbreak, without warning, and apparently without sufficient cause. In the early part of the summer of 1901, when it prevailed to such an extent in eastern North Carolina, a single outbreak occurred in Lancaster county, South Carolina. An inspection revealed that a number of horses and mules belonging to a wealthy cotton planter were involved, but as the mule is supposed to be practically immune to the disease, some doubt was entertained until several more cases developed and post-mortems were made. Nothing more was heard of it until in the winter of 1901-02, when a disease supposed to be "staggers" was reported from Orangeburg county. An inspection was made, but no definite information could be had except that a few mules had died of cerebral symptoms resembling leuco-encephalitis, and two that had apparently recovered would occasionally show signs of return of the disease by pulling to one side in harness or even falling. While I was still investigating this case reports began to reach me from the southern part of the state. Hurried trips were made, but on arrival it

*Read by title, the author being absent.

was found in nearly all cases that the horses had died and no post-mortem material could be had. By midsummer about fifty cases had been reported, and the disease seemed to be on the increase. Under the system of inspection used it was found practically impossible to investigate each outbreak promptly, and I was at a loss to know if all the cases reported as "staggers" were really leuco-encephalitis. Finally it came nearer to the college and increased in severity, until there was no trouble in getting material for examination every week. The course of the disease was carefully watched, and numerous dissections made. A number of brains were forwarded to the pathologic laboratory of the bureau of animal industry, and it was established beyond a shadow of doubt that the disease was epizootic leuco-encephalitis, as described by Dr. Tait Butler in the bulletin of the North Carolina Department of Agriculture for September, 1901, and by Dr. S. S. Buckley in Bulletin No. 80 of the Maryland Experiment Station, February, 1902. There is good reason to believe that most of the cases reported to me for the eighteen months mentioned were none other than this disease.

If this view be taken a conservative estimate of the financial loss to the farmers of South Carolina within a year and a half from the time the disease first appeared would be from \$20,000 to \$25,000. The loss in North Carolina during the summer of 1901 alone would certainly be twice this amount, and since we know that the disease prevails every few years in Maryland, Virginia, Georgia, Mississippi and many other states the loss from this one disease becomes appalling. Yet, so far as I am aware, not a cent has ever been appropriated to investigate it, and little attention has been paid to it except by a few state and station veterinarians, who have very limited means at their disposal for investigations of this kind.

The conditions under which it has prevailed in South Carolina have been varied. In many cases badly constructed barns, with poor ventilation, poor water supply and filthy lots have served as predisposing causes; but in nearly all cases where the food could be examined it was found to consist of damaged corn or hay, and sometimes both. While the cotton farmer will always tell you that he is "trying to make enough corn to do" him, yet it is a fact that a large per cent of the

horses and mules of the South are fed a part of every summer on a low grade of western corn. Nearly every dealer in feed stuffs in this section carries in stock two grades of corn, one known as "bread corn," from which meal and grits for human food are made, the other "feed corn," considered fit only for stock food. There is no doubt in the minds of those who have investigated the disease that this "feed corn" is the most prolific cause of staggers all over the South. As Dr. Butler has shown, damaged oats may prove an equally prolific source of the disease, and there seems little hope of improving conditions by inducing cotton planters to feed more oats and less corn, as we would no doubt then have as poor a grade of oats as we now have of corn for feeding purposes.

During the heavy rains which sometimes fall in the summer down South it is difficult to save hay, especially peavine, without having more or less of it damaged. It would be well to bear in mind that damaged hay may be as potent a cause of the disease as damaged grain.

I shall not attempt to discuss the symptoms or pathology of the disease, but will close by adding that the cases treated have always failed to respond, and after considerable observation I agree with other writers that a genuine case of cerebrospinal meningitis or leuco-encephalitis, where the lesions have taken place in the brain, is incurable.

A MUTUAL BENEFIT SOCIETY FOR VETERINARIANS.

WM. DOUGHERTY, BALTIMORE, MD.

I desire to bring before your notice this evening a subject which has been on my mind for a long time, and which I have always thought to be of great importance to the members of this association. This subject has absorbed my attention for some years, and has been looked into by me in all its phases. I have discussed it at length with many friends, but more especially with our former president and another untiring worker for the veterinary profession, Prof. A. Liantard, who has given it his cordial support and endorsement. The time has now arrived when I think it proper to set it before you, and you are therefore asked to consider and discuss the matter at this meeting.

We, as veterinarians, are handicapped in the matter of securing indemnity against accidents and illness, on account of the hazardous risks which we are supposed to represent as practicing veterinarians; and on this account many a practitioner has no doubt felt a stress at such times, as he may have unfortunately been laid up by accident or illness, which under other circumstances might have been alleviated to a material extent.

We may be blessed with good and vigorous health, and be in the enjoyment of a practice that more than keeps the wolf from the door, and which may even afford us the luxuries that we are all so wont to desire, but at one stroke our means of support may be temporarily taken from us, and then we will feel the pressure of demands that are utterly beyond us. It is possible that the need of the mere necessities of life may be felt, should our disability continue for any length of time.

Although some of us may enjoy more than the ordinary quota of success, financially, yet those who may be thus fortunately placed would not refuse the proffer of aid from their brethren of the fraternity who may be linked with them in a

Mutual Aid Society, and although any assistance offered might seem unnecessary, yet it seems to me it would be thrice welcome, as there are times where the ready means for securing needed aids to returning health are not immediately at hand and available, and a hesitation is felt that causes one to refrain from calling on those upon whose friendly assistance one could rely.

It is the desire and ambition of every man to maintain good health that he may supply the comforts of life to those dependent upon him, and should the means to keep up the supply be suddenly taken from him by disease, he is left in a predicament that at times is keenly felt, if not distressing. But if he has had the foresight to prepare for just such an emergency, perhaps through the persistent appeals of the insurance agent, who taxes the veterinarian double, he feels at once relieved from the worry that often delays recovery, or at least makes an enforced rest more irksome than need be.

It now seems to me to be a favorable time for us, as veterinarians, to arrange for just such emergencies, by setting in motion a plan to provide for ourselves an indemnity against sickness or accident that will help us tide over such unfortunate periods of our lives with a fuller purse and less worry.

The best way to do this, it appeared to me, was to form among the members of our profession, and the American Veterinary Medical Association in particular, a society founded on mutual plans that would insure to us a weekly stipend of a certain amount and for a certain length of time in the event of illness, and would provide for our heirs or assigns in the event of our death a certain amount of money. The formation of such an association entails no small amount of labor, and I thought it well to prepare in advance a copy of by-laws fashioned from those of an organization of similar character in the medical profession.

These by-laws may possibly be crude as yet, but they would make a good foundation for more complete ones, and I am sure contain the corner stone of a good set. It is not my desire that they be literally followed out, yet if it seems good to you to form an association on the lines set forth, you will find much in them to direct and assist in setting forth a more complete and concise set.

I think it advisable and eminently proper that the officers of the association should be selected from the members living near a certain center, so that they could readily assemble for their meetings, correspond more conveniently, and more satisfactorily manage the business affairs. This would insure a more harmonious control of affairs.

It was therefore thought that New York City would be proper headquarters for the association, being central to a large number of members of this association. This explanation, I hope, will abate any objection of a sectional character.

I would further state that this matter is brought before you with no thought of the possible proffer of an office for me in the directory, because I am too far advanced in years to be eligible for membership under the by-laws, and I have thought over the subject with no selfish motive, the only incentive being the desire for the advancement of the profession at large and the fraternizing more fully of the members of the American Veterinary Medical Association.

I would ask you, therefore, to appoint a chairman for this meeting; that the matter may be fully discussed in all its points, and, if it meets approval, that the association may be launched on a career that I would hope to be helpful and successful.

ARTICLE I.

Name.

This association shall be known as "The American Veterinarians' Mutual Aid Association."

ARTICLE II.

Object.

The object of this association shall be to afford pecuniary aid to sick or injured members, and also aid to their widows and orphans or legal heirs.

ARTICLE III.

Officers.

SECTION I. The officers of this association shall be a president, two vice presidents, a secretary and treasurer, and six directors.

The directors shall be divided into three classes of two each, one class to be retired and one to be elected at each annual meeting.

The officers of this association shall be elected on the second day of the annual meeting of the American Veterinary Medical Association, and they shall hold office until their successors shall be installed. In addition to said officers, there shall be appointed by the president an *advisory board*, to consist of one member from each state in the Union and from each province of Canada, and such other countries as shall be represented in the membership of this association.

SEC. 2. The election of officers shall be by ballot, and a majority of the votes of members present and voting shall be necessary to a choice.

ARTICLE IV.

Membership.

SECTION 1. Any member in good standing of the American Veterinary Medical Association who is in good health and in active practice, or who is a teacher or professor in any veterinary school, and who is under fifty (50) years of age, and who shall have passed a satisfactory medical examination, may be admitted to membership in this association by a vote of two-thirds of the board of directors present at any stated meeting, upon the payment of two dollars (\$2.00) initiation fee, and by signing a suitable voucher within thirty (30) days after he shall have received notice from the secretary of his election. This voucher shall be kept on file by the secretary.

SEC. 2. Each candidate shall fill up and sign an application for membership.

His professional standing and good health shall be vouched for by two members of this association, one of whom shall be the member of the advisory board for the state or province in which the applicant resides, and the application must be sent to the secretary and treasurer.

ARTICLE V.

The Funds.

SECTION 1. There shall be three funds, as follows: A sick benefit fund, a death benefit fund, and an expense fund.

SEC. 2. Each member shall be assessed six dollars (\$6.00) per year, said sum being paid on admittance and to be incorporated in the sick benefit fund. In the event of injury by accident or sickness, each member so invalidated shall receive from the sick benefit fund the sum of fifteen dollars (\$15.00) per week for a term of not more than eight weeks in any one year. Extra assessments may be called when necessary at the discretion of the board of directors.

SEC. 3. Each member shall pay on admission and upon further assessment by call of the secretary a sum fixed by the following rate: One dollar (\$1.00) at the age of twenty-five years, and ten (10) cents additional for each year of his age over twenty-five years. The amount so received is to constitute the death benefit fund.

SEC. 4. The expense fund, for the maintenance of the association, shall be constituted by the initiation fees and fifteen per cent (15%) of all moneys received by the association.

ARTICLE VI.

Assessments.

SECTION 1. Upon receiving proper notification of the death of a member, the secretary and treasurer shall immediately forward to every member an assessment call for the death benefit fund.

SEC. 2. At the death of a member a sum of money equal to one assessment call of the entire membership, less fifteen per cent (15%) shall be paid to the heirs or legal representatives of said deceased member within ninety (90) days after this association has been notified of the death of the member.

SEC. 3. The omission to pay an assessment within thirty (30) days after it is called shall render the delinquent liable to forfeiture of his membership.

SEC. 4. The *American Veterinary Review* shall be the official organ of this association, and calls for assessments published in said *Review* shall be official and peremptory.

ARTICLE VII.

The President and Vice Presidents.

The president shall preside at all meetings of the association, and in his absence a vice president shall take his place. The president shall be chairman of the board of directors.

ARTICLE VIII.

The Secretary and Treasurer.

SECTION 1. The secretary and treasurer shall keep correct minutes of the proceedings of this association and of the board of directors. He shall promptly send all applications for membership to the board of directors, and shall duly notify all new members of their election. He shall without delay notify the heirs of deceased members of their claims on the association. He shall send out calls for assessments on direction of the board of directors. He shall also perform all other duties pertaining to the office of secretary.

SEC. 2. The secretary and treasurer shall receive and have the custody of all moneys of the association, and shall deposit these moneys with a trust company designated by the board of directors; said deposit shall be in the name of this association.

SEC. 3. All checks on the trust company shall be drawn to the order of the president and endorsed by the secretary and treasurer.

SEC. 4. The secretary and treasurer shall pay only such bills and appropriations as shall have been approved by the board of directors and endorsed by the president.

SEC. 5. He shall make a report of the finances of the association to the board of directors at their regular meetings, and whenever requested; also present an annual report at each annual meeting of the association.

SEC. 6. The books, papers, funds and all properties belonging to the association shall be subject to the board of directors.

SEC. 7. The secretary and treasurer shall be bonded in a proper sum, the cost of which shall be borne by the association.

SEC. 8. The salary of the secretary and treasurer shall be decided by the board of directors.

ARTICLE IX.

The Board of Directors.

It shall be the duty of the board of directors to scrutinize and pass on all applications for membership.

They shall also investigate and order paid such claims on the association as they deem just and accurate.

They shall also supervise all business affairs of this association.

SEC. 2. If any director shall absent himself without satisfactory excuse from three consecutive stated meetings of the board, his seat may be declared vacant by a vote of two-thirds of the directors present at any stated meeting, and a new director elected by the board, who shall hold office until the next following annual meeting.

ARTICLE X.

The Advisory Board.

It shall be the duty of the members of the advisory board to pass on the eligibility of all applicants for membership who reside in their respective states or provinces.

SEC. 2. They shall also examine into and pass on all claims for benefits of members of the association residing in their respective states or provinces.

ARTICLE XI.

Meetings.

SECTION 1. This association shall hold its annual meeting on the second day of the annual meeting of the American Veterinary Medical Association, when reports shall be submitted, officers elected, and such other business transacted as may be proper.

SEC. 2. The board of directors shall hold their meetings as may appear proper, and as often as necessary.

SEC. 3. The board of directors shall hold their meetings in New York City.

DISCUSSION.

PRESIDENT STEWART: Gentlemen, the proposition is before you for consideration. We as a body are to determine whether or not we will favor the organization of a mutual benefit association.

DR. WINCHESTER: You well know that last year I favored the formation of such an organization. I looked carefully into it before doing so, and I am still of the opinion that it would be beneficial. As I understand it, this association has no legal status; we are not an incorporated body. Still, if this plan should be formulated (and I trust it will be), I will certainly do anything that I can to further it. It would be well to take some action whereby some definite steps may be taken, and there should be free discussion in order that we may get the opinion of different members.

DR. KNOWLES: This is a matter of great importance to the members of this association. I feel that there should be a pretty general expression from the individual members as to how they feel about it.

DR. HUFF: What is the age limit?

DR. DOUGHERTY: Fifty years.

DR. SMITH: I cannot see how an affair like this could be carried on successfully. Veterinarians are limited in number, as you know, and to have a society like this carried on, an assessment would have to be placed upon every man. It seems to me it would be preferable for every man to insure in one of the regular insurance companies.

DR. TORRANCE: I think this association is indebted to Dr. Dougherty for the very able way in which he has placed this matter before the association, and for the extreme pains he has taken in drafting the by-laws, which he has submitted for our criticism. There can be no question as to the advisability of every man making some provision against the shafts of fate, and the obligation rests just as strongly upon the member of this association as upon any one else to provide for the future of his family should disaster attend himself. But, gentlemen, I am convinced in my own mind that the time has hardly yet been reached when this association, with a membership of only some 470 members, is in a position to un-

dertake the management of an undertaking of this kind. The payment of fifteen dollars a week of sick benefits to members of this association would, in my judgment, entail a larger expenditure than the contemplated revenue would sustain. If this were the case, it would entail additional assessments, making the insurance very expensive to those engaged in it. Although I am strongly in favor of an association of this kind, were it feasible, and its probable success not in doubt, still under the present circumstances of this association I feel that the time is not ripe for its organization.

DR. WINCHESTER: I agree with Dr. Torrance that the payment of sick benefits is not feasible. It would be hard to get the required fifteen dollars a week for a number of weeks from the income that would be secured from the members of the association. I have never known of a sick benefit insurance company that lived very long. But an assessment plan for the payment of a specific sum to those who are dependent upon a deceased member might be made a feasible scheme. I don't wish you to think that I feel as though such an organization ought not to exist. I think it advisable that some definite action be taken in regard to this matter at this meeting.

DR. LYMAN: It seems to me that the point Dr. Torrance brought up is one well worth considering. The amount of assessment which would necessarily be required in a mutual benefit organization of the kind suggested would be so great that it would not be feasible for this association to attempt anything of the kind. It might, however, be a good plan for this association to appoint a committee to consult with those in authority in various accident and sick benefit insurance companies, and try to do something whereby the rate we have to pay on policies of this nature be decreased. It is well known that members of the veterinary profession have to pay a much higher premium for accident insurance than do persons in other professions, and if some influence could be brought to bear to relieve the condition of things which confronts us in this respect, it would be, in my opinion, the best plan.

DR. BELL: I have paid some little attention and given some thought to this subject, and it appears to me that the question before the house now is as to whether we wish to establish such an organization; not on the character of it nor

the policy of it, but as to whether we are prepared to organize an association that is intended to provide any benefit, whether it be a sick benefit or death benefit. It may be a question whether an organization with a death benefit would be feasible. It seems to me that such an organization could be formed where the expense would be less than under ordinary insurance. If we had a membership of two or three hundred, and an assessment was levied on each member at any one death, a thousand dollars could be raised at a very small expense per member per annum. If a sick benefit is to accompany it, it would increase the cost. There might be some great difficulties experienced in carrying out the sick benefit provisions. Our members are scattered all over the continent; each reported case of sickness must be investigated, and this might entail a great deal of trouble, a great deal of expense, and possibly some imposition. As to the policy and character of the organization, it seems to me that these might be profitably discussed.

DR. HOSKINS: I think that this is a subject which must of necessity appeal to every member of the profession and every member of the association. No doubt, in the memory of a number of our members, deaths have occurred where some provision of insurance would have been of very great benefit. We all know of instances where provisions in cases of disability would certainly have been very helpful to members of this association, and to my personal knowledge would have preserved to this association very valuable members, who, through illness, were forced to drop back in their dues, and for mere lack of income were forced to relinquish their connection with the association. It is a trite saying that charity begins at home, and I think that the taking care of our own members, or the making of some plan by which they might be provided for in case of need, would be a good plan for us to adopt. It would be in keeping with similar societies that exist in other countries, and might act as an additional attraction to membership. I feel that if such a plan be adopted and carried into execution it will be essential that every member of the association shall become a member of the insurance society, if he is eligible, because I do not believe it can be carried on successfully with a less membership than about 500. It seems to me it ought to be easy to secure that number who

would be willing, even though they might not be in hearty accord with the movement, to contribute something each year towards the maintenance of an organization of this kind that at times could do so much good.

DR. BELL: While we cannot help but admire the spirit that prompts the views of Dr. Hoskins, I think it would be a great mistake to impose upon a scientific body an insurance company or a fund to relieve indigent members. There should, in my judgment, be no obstacle placed in the way of eligible veterinarians who may be inclined to associate themselves with this association. To impose upon a prospective member, or upon our present members, without their free will, a sum to be paid annually is certainly not in accord with the freedom that we should feel in our membership here; and further, taking insurance should be optional and entirely voluntary. I believe that the proposed insurance organization should be absolutely independent, should be run strictly upon business principles, and should have nothing in common with this association except as to eligibility of members. In similar insurance organizations of the medical profession there are no sick benefit provisions. A medical organization in the City of New York has a fund that gives to the heirs of deceased members \$1,000. Veterinarians sometimes leave those dependent upon them poorly provided for, and certainly the last hours of one who is leaving those whom he holds dear would be passed in very much more comfort if he knew they were to receive even this sum. I therefore think we ought to discuss freely and vote on the subject of whether we want such organization or not, whether the time is ripe for it, and decide as to whether it shall carry a sick benefit fund as well as a death benefit fund. Personally, I think the sick benefit fund would be rather difficult to manage upon business principles.

DR. LOWE: I think that before we take any action on this important matter we should look into the various phases of insurance, ascertain what kindred associations have accomplished, and see what existing life insurance companies are offering. In other words, first ascertain whether we can do better for ourselves as an organization, or whether we can do better by dealing with regular line insurance companies. Before taking any definite action a committee should be appointed to look into this matter in all its aspects and report to

us. I do not believe that we have enough data or enough information in connection with the subject of insurance to undertake this thing intelligently at the present time.

DR. BAKER: I do not believe that an assessment association can ever be made a lasting success. Isn't that the history of all assessment benefit associations? When they are first organized and started they work very well. But deaths are inevitable. There might not be more than one or two the first year, two or three the second, and half a dozen the third. Each succeeding year the deaths will be more numerous; and the assessments will come along heavier and heavier, without a corresponding addition of young men to the membership to keep the assessments down within reason. That has been my observation and experience.

Another objection that occurs to me would be in the difficulty of collecting assessments. What hold would you have upon the members? I see one of the by-laws here is that failure to forward an assessment within thirty days forfeits the membership. How long do you think it would take to eliminate two-thirds or three-quarters of your membership?

I do not wish, gentlemen, by making this expression to cast any reflections on the merits of the case, or upon the honor and liberality and conscientious friendliness of the members of this association one for another, but it is the habitual carelessness of people in general. It does not apply to this association any more than to any other, but it is a general human failing. I can't see how it could be made a success, because you can't hold your members to their membership.

DR. HOSKINS: Would it be feasible during the incoming year that a poll of the membership be made, in writing, as to the desirability of forming this mutual aid society?

PRESIDENT STEWART: I think so.

DR. HOSKINS: If that is feasible, then I offer the following motion: That a committee of five be appointed to make a poll of the membership of this association, in writing, as to the desirability of forming a veterinary mutual aid society.

DR. BELL: I second that motion.

PRESIDENT STEWART: You have heard the proposed motion by Dr. Hoskins. As many as are in favor thereof will manifest it by saying aye. Contrary no. The ayes have it, and it is carried.

EXPERIMENTS WITH THE STOMACH WORM IN SHEEP.

A. S. WHEELER, BILTMORE, N. C.

The Biltmore flock of Southdowns and Southdown grades was introduced in the fall of 1895, and it was sold (with the exception of about fifteen head) in the spring of 1902. It was in the spring of 1897 that, soon after my arrival at Biltmore, my attention was called to the dying and malnutrition of the sheep, due partially, or entirely, to the *Strongylus contortus*, or stomach worm. This troublesome parasite was evidently introduced with the sheep. The records show that some sheep died, probably from this cause, during the fall of 1895. In the spring of 1896 sheep of all ages began to die, and from July 11th to December sixty-six sheep, young and old, succumbed to this pest.

The first and most important thing to determine about animal parasites is their life history and habits. Whereas the life history of the *Strongylus contortus* is exceedingly simple according to Cooper Curtice and other authorities, yet in the most excellent report on "The Internal Parasites of Sheep" only one suggestion is given as to the way the worm is transmitted from animal to animal, namely, by means of eating egg-infested grass and drinking polluted water. I do not wish to controvert the probability of this way of transmission, yet the evidence might have been more complete, and I have reasons to believe there are other ways of transmission. It is supposed to be carried from one animal to another through the medium of the pastures. Although I have seen no mention of the possibility of other means of transmission, my observations lead me to believe that, possibly, the eggs of this strongylus are taken in by the suckling lamb while in the act of sucking, as the teats are so close to the sweatlocks that the young lamb will, in all probability, get hold of the latter, and thereby become infested. To prove this, I weaned ten lambs (a few days after birth) and placed them in a box stall specially made for this purpose, with new board floor and sides, which was clean and disinfected every week. These lambs contained a good many worms when they were killed, about three months later. The partition which separated these ten lambs

from the rest of the flock was four feet high, without any passage-way between. The lambs were too small to eat the litter from the floor, before they were weaned, therefore unless the rhabdiform embryos or eggs were carried by the dust, or by chickens, or by rats, or lice, or ticks, I am at a loss to reconcile the occurrence of the worms in these lambs with the commonly accepted belief concerning the life habit of the parasite. None of these lambs had ever been near a grass plat nor a pond of water. They had a small enclosure, eight feet square, in the yard, separated by a closely woven wire fence from the main yard, in which they were allowed to roam on good days. Another possible source of contamination may have been the green feed (rape?) with which they were soiled. Manure from the sheep barn may have been spread on this land before it was cultivated.

The following experiment was made on five of these lambs: An effort was made, by means of a large hypodermic syringe, to introduce twenty-five male and twenty-five female worms directly into the fourth stomach, through the abdominal walls, in five of these lambs. There is no certainty that they entered the fourth stomach, although it is more than probable that they did (see heading, "Hitting the Fourth Stomach"). These worms were taken from a freshly killed lamb, and by using a trochar and canula, which was passed slantingly through the abdominal wall about an inch behind the xiphoid cartilage, on the median line, the worms were forced in. My object in doing this was to determine if the worms could possibly multiply *in situ*, but as all ten of these lambs seemed to be more or less grossly infected, both those inoculated and the controls, nothing definite could be gathered from this experiment. My surprise was great when they all showed the presence of worms.

The following memoranda may prove of some interest *per se*, or for historic reasons, as the investigations were made in 1898 and 1899, since which time the publication of Stiles' researches on this subject seem to have reached a more satisfactory result than those of your humble servant:

The following remedies were tried for the stomach worm:

Turpentine and oil.

Fluid extract of spigelia and senna.

Santonin.

Summer's powders.

Benzine or gasoline.

Coal tar products, such as creolin, cloronaphtholeum, etc. A brief report of the vermicial power of these drugs was published in the *Breeder's Gazette* of Oct. 12, 1898.

I shall not take your time by going over all the details, nor give the number of cases to which the various drugs above mentioned were administered, but shall try to confine myself to the cases that seem to throw some light upon the efficacy or failure of each treatment.

Turpentine and Oil.

Dose—two to four ounces, in milk or oil.

Although this mixture was given to a great many sheep, perhaps a hundred, I have only picked out a few cases that mean, to my mind, anything definite. To make myself clear on this point, it might be added, that, in giving turpentine and oil or benzine to a bunch of sheep where it was indicated, sometimes there seemed to be more or less improvement, and sometimes the sheep would continue to grow worse. I have not regarded such results as favorable or unfavorable for this or that particular treatment, for the simple reason that there might not be a sufficient uniformity, or a sufficient number of cases, to warrant a conclusion. I have practically limited myself in the following pages to the cases where the effect could be confirmed by a post-mortem, as I was completely deceived many times by taking the clinical symptoms as a criterion.

One lamb received turpentine and oil September 16th and 17th; died October 9th full of worms. Three lambs had turpentine and oil September 16th, all in poor condition; evidently infested with worms. They all died September 29th; one was free from worms, and the other two were full of worms.

Two lambs had turpentine and oil on September 16th, and died October 3d. Both were full of worms.

One lamb had turpentine and oil on September 16th; died October 4th, full of worms.

One lamb had turpentine and oil on September 17th; died October 9th, full of worms.

One lamb had turpentine and oil September 16th; died October 9th, full of worms.

Synopsis.—Eight lambs in all had turpentine and oil, seven having one dose and one two doses a day apart. They all died

between thirteen and twenty-three days after receiving the medicine. One was evidently free from worms; the other seven had countless numbers. It may be possible that the one exception was infested with some other parasites from which it died, and never had any stomach worms. It may have been a case of complex helminthiasis. I regret that it is impossible for me to answer this question, as no search was made for other parasites. Turpentine and oil were certainly a failure in the above cases.

Fluid Extract Spigelia and Senna.

Dose—One ounce.

Gave, October 14th, to four lambs; examined manure for three days (as they were kept in a closed room); found a few conorti and few segments of tapeworms on October 17th, not enough to justify the conclusion that the medicine had brought them away; no purging followed.

On October 19th another died, having had two grains santonin earlier in the season, turpentine and oil September 17th, and four doses of Summer's powders and two ounces spigelia and senna October 15th(?). This lamb's stomach was crowded with worms.

On October 24th another died, having had same treatment as foregoing, and was full of worms.

October 26th. Same as above.

Resume.—Four wethers got one ounce; not enough worms passed for three days afterwards to show that the drug had any effect in that dose.

Three lambs got two ounces, as well as at previous times santonin, turpentine and oil and Summer's powders. They were all full of worms, which caused their death, in all probability.

Benzine or Gasoline.

During the summer of 1899, hearing of the value of benzine as a vermicide for stomach worms, we decided to give it a trial.

Dose—One to two ounces in milk or oil.

Two lambs that had benzine treatment Aug. 7, 1899, were butchered August 9th, and found to be full of worms.

Two lambs had benzine treatment August 7th; killed September 19th. Showed very few worms.

One ewe had benzine August 7th; killed September 30th; had a good many worms.

One old ewe had benzine August 7th; killed October 10th; no worms.

• One lamb, benzine August 7th; killed October 12th. About fifty worms present.

One old ewe had benzine (about two ounces) October 7th; killed October 12th; no worms.

One lamb had benzine August 7th; killed October 13th; full of worms.

One lamb had one ounce benzine in twelve ounces milk October 5th; killed October 21st; not many worms.

One lamb had benzine August 7th; killed October 24th; full of worms.

One lamb had benzine August 7th, also one ounce October 26th in five ounces milk; killed October 27th; full of worms. One lamb had benzine August 7th; killed October 27th; a few worms.

One lamb had one ounce benzine in five ounces milk October 23d; very few worms when killed.

On November 1st nine lambs got two drams benzine in linseed emulsion; no bad effects; used gag and probang. A few strongylus and tapeworm segments were passed a day or two afterwards.

On November 5th repeated benzine.

On November 7th repeated benzine.

On November 9th lost wether lamb that had three doses of benzine; full of worms; died from effect of benzine(?).

On November 10th lost another lamb; had benzine; no worms.

On November 13th another wether died; no worms.

On November 24th I dosed 24 wethers with one-half ounce benzine, and repeated dose November 15th. Found no worms afterwards in excrement.

On April 18th a grade ewe presented symptoms of worms. Mucous membrane pale, and dropsical under jaw; off feed. Gave two ounces benzine in milk. No better April 20th. April 21st some better, and by 26th seemed all right.

Physiological Effects of Benzine.—Four ounces of benzine in eight ounces of milk colored with blueing, was given to a fifteen month old wether, at eleven o'clock a. m.; began exhibiting musculo-nervous tremors immediately—pulse 128 (another lamb

at same time 116). In ten minutes the back was arched and tremors intensified; began grunting and short breath. In fifteen minutes respirations were fifty, very jerky and grunty; sweating inside thighs; pulse now very feeble and irregular and impossible to count and obscured by tumult of respiration. In half hour he began coughing; the abdomen became distended; and there was grating of teeth. At 12 m. effects of benzine began to subside, and as recovery seemed probable, destroyed at 12:15 p. m. Benzine all in paunch (no worms), which contained a gallon of dry food; no benzine in fourth stomach. Both lungs hepatized along lower borders and entire anterior lobes.

Resume of Benzine Treatment.—There were seventeen cases in all receiving benzine, and four of these had no worms; two being old ewes and two lambs. Six of the remaining thirteen had a few worms and seven were full of worms. Even admitting that the four were cured by benzine, this is only four out of seventeen that were free from worms; or if we claim that the other six were helped by benzine, it leaves seven upon which the drugs had no effect.

Except in the case of two lambs that were killed two days after receiving benzine, and found to be full of worms, and one lamb getting benzine October 12th and killed October 15th with not many worms, and one lamb getting benzine October 26th and August 7th, killed October 27th, full of worms, the interval between dosing and post-mortems was rather too long to draw definite conclusions, as they may have become infested a second time. We certainly know that benzine was inert in seven out of seventeen, and judging by its clinical effect it was of no benefit, which fact led to its abandonment. As to its effect on the worms when brought in direct contact with them, we shall take up this branch of the subject later.

Method of Administering Benzine.—The sheep were held on their haunches by the shepherd, while I drenched them with probang funnel and gag; in other words, the drug was poured directly into the paunch.

Dr. Stiles states he used it (gasoline) in a number of cases, and "found the claims made for it to be more or less justified." He furthermore adds "that the objection to it is, that, to be efficacious, it must be repeated from three to six times, which is impracticable on large ranches." He also points out the danger from its use in sheep suffering with pleurisy. I had quite a number of fatali-

ties from congestion of the lungs with benzine, although the gag was used and the drug passed directly into the paunch.

Stiles found that either aromatic spirits of ammonia or strychnine were antidotal to gasoline. My failures with gasoline, as well as with the other liquid medicines, according to Dr. Stiles, are probably explainable by the fact that "better results may be expected if the sheep is dosed standing." He claims that in the haunch position only part of the drug passes into the fourth stomach. Whether the use of probang alters the case could only be conjectured without further experiment.

Coal Tar Products.

Everything else seeming to be a failure, as a last resort chloronaphtholeum was resorted to. But this, too, for reasons which will be given later, and which do not seem to apply to the others, did not give the good results hoped for.

One lamb received six ounces chloronaphtholeum in two quarts water, October 15th; killed October 21st; plenty of con-torti.

One lamb received six ounces chloronaphtholeum in one quart of water October 15th; stomach full of worms October 21st.

One lamb had benzine August 8th, and one dram chloronaphtholeum in water; a few worms October 27th.

These cases indicated that chloronaphtholeum given in this way was as inefficient as the other drugs. I therefore decided, in the first place, to determine what effect these vermifuges or vermicides might have upon the stomach worms when brought in direct contact with them.

First, the abomasum, containing worms, was removed from a freshly killed lamb and one-half ounce benzine was introduced through a small opening in the wall. A churning motion was then given to the viscus for half an hour. This had no perceptible effect upon the vitality of the worms. The benzine was then drained out and replaced by one ounce of chloronaphtholeum. In seven minutes an inspection of the interior of the stomach revealed every worm dead.

Testing Drugs.

An apparatus was then improvised for testing these drugs further, which consisted of a number of two-ounce wide-mouthed

bottles, surrounded by soup plates, in which warm water was added to keep contents of bottles up to blood heat. The moment the medium became chilled the worms would lose their vitality and stop wriggling, and it was impossible to tell whether they were dead or alive, although they could be resuscitated even after an interval of several hours by applying warmth to the medium containing them.

Into these bottles a few worms from a freshly killed lamb were placed, with about an ounce of the contents of the stomach, and to these bottles the drugs were added.

Five per cent *chloronaphtholeum* destroyed the worms in ten minutes in first trial, in fifteen minutes in second trial, in three minutes in third, and in two minutes in fourth. In the first and second trials warm water was added to the bottles from time to time, and there was considerable dilution. In the third and fourth trials the warm water surrounded the bottles. This accounts for the difference in time.

Turpentine and oil (one part to eight parts); worms were vigorous after an hour.

Summer's Powders (five grains to one ounce water); no perceptible effect in one and one-half hours.

Santonin (one grain); no effect in one and one-half hours.

Lysol and *creolin* had about the same effect as *chloronaphtholeum*.

Of course, a vermifuge may not necessarily be a vermicide, and until more is known about the action of the worm medicines in general, this evidence should not be considered conclusive.

Prof. H. C. Wood claims "that it is of very little practical use to make the division between vermicides and vermifuges, and that it is of much greater importance to establish the relations between these drugs and the different species of entozoa." In the case of *santonin*, the whole subject of its action upon the *ascarides* is guesswork, and, after all, may not the cathartic be the whole thing? However, it is out of place at this time to take up this important subject.

The result of these experiments indicated that the coal tar products were the drugs to use, provided it was practicable to bring the drug in a sufficient degree of concentration in contact with the *strongylus*. Here was the whole trouble, it now appeared to me. I believed that the cause of failure, at least in

the case of the chloronaptholeum, could be explained by the uncertainty, if not impossibility, of making the drug reach the fourth stomach directly (see Stiles' opinion above), and that it would be inert after it was diluted by the contents of the paunch, which varies from one-half to one gallon. My experience with fasting ruminants did not hold out any hope in that direction, as there is usually a large amount of food in the paunch after withholding food for several days.

Experiments in Reaching Fourth Stomach.

It is commonly supposed that liquids pass directly through the œsophageal gutter into the third and thence to the abomasum, without mixing to any extent with the contents of the paunch. Acting upon this belief, I tried to distend the fourth stomach, for reasons that will be explained in a moment. I failed to get the distension of this viscus, either by withholding water for twenty-four hours and then allowing to drink freely, or drenching the sheep with one-half to a gallon of water. Pumping air into the paunch and fourth stomach with a bicycle pump was also resorted to. In one instance, the only one of the kind in which an examination was made, after giving four ounces benzine in eight ounces milk all the benzine emulsion was found in the paunch over an hour afterwards, none could be detected in the fourth stomach.

In another instance I gave a lamb one pint of water, colored with Gruebler's alcoholic solution of fuchsine at 11 a. m.; killed lamb at 1 p. m.; none had reached abomasum.

Through Abdominal Wall.—Below is a record of hits and misses of the fourth stomach with trocar and canula:

Two hits with fuchsine solution, one inch behind xiphoid cartilage on median line.

Three hits with fuchsine solution one and one-half and three and two-thirds inches to right of median line and along border of last rib, four hours after drenching with one gallon of water (three marks on fourth stomach). Paunch contained one gallon and abomasum one and one-half pints, and much distended.

Two hits, one and one-half inches and three and three-quarters inches from median line. Paunch contained one gallon and stomach one quart. One miss in last sheep.

Three hits, three inches from median line to right with fuchsine.

One miss, three inches from median line to right. Stomach contained five and one-half ounces.

One hit with fuchsine solution three hours after getting a drench of one-half gallon water, although stomach contained only three ounces.

One hit with fuchsine solution after drenching with one-half gallon water.

Two misses after drenching with one-half gallon water.

One hit; no water.

One miss; no water.

Two hits; no water. Stomach distended with gas.

Where not stated the point of entrance was one to two inches behind the xiphoid cartilage.

One miss; no water. Hit reticulum.

One miss; water one gallon; 1 p. m.; killed 2 p. m., hit reticulum.

One miss; hit reticulum; no water; stomach collapsed.

One hit; water; 1 p. m.; killed 2:30 p. m.; stomach not distended.

One hit; water; 1 p. m.; killed 2:45 p. m.

One hit; water; 1 p. m.; killed 3:00 p. m.; stomach collapsed.

One hit; dye (fuchsine); 1 p. m.; killed 3:30 p. m.; dye all in paunch.

Nine hits in succession; water.

One hit; intercostal space; stomach contained thirteen ounces, mostly sand.

Two misses; hit reticulum; stomach contained five ounces.

One miss; worms came through canula.

One miss; stomach's posterior border was on line with last rib; impossible to hit, as it was collapsed, without penetrating rib.

One hit; four inches to right of median line and just behind last rib.

One miss; five inches to right of median line; stomach narrow at this point and rather fat.

One miss; five inches to left of median line; stomach only about one inch in diameter at this point; trocar entered fat.

Four misses at five-inch point; needle penetrated fat.

Synopsis.—Out of forty-nine trials there were thirty-one hits, or sixty-three per cent, and eighteen failures.

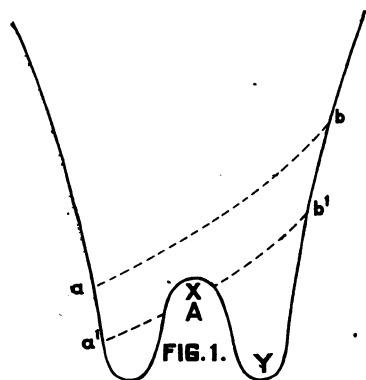


Fig. 1.—General Outlines. a, b, Posterior border of abomasum when distended. a', b', Posterior border of abomasum when empty. A, xiphoid cartilage. Needle may be slanted at an angle of 45° at "X" without reaching diaphragm; at "Y" needle may be slanted about 15° with safety.

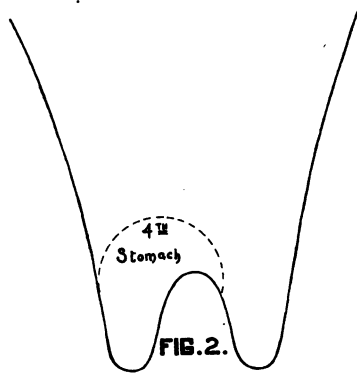


Fig. 2.—General outlines.

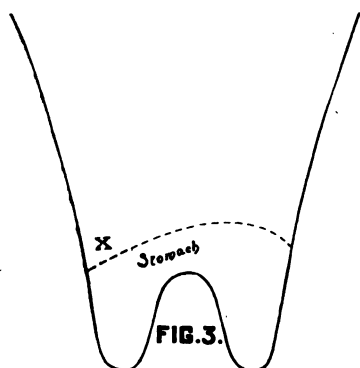


Fig. 3.—Missed fourth stomach at X.

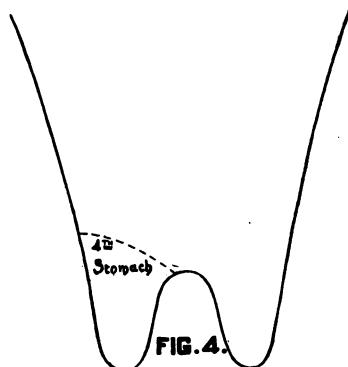


Fig. 4.—Lungs inflated with bicycle pump, in order to press diaphragm back and to bring fourth stomach within striking distance.

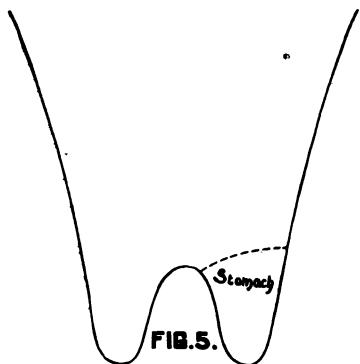


Fig. 5.—Lungs inflated.

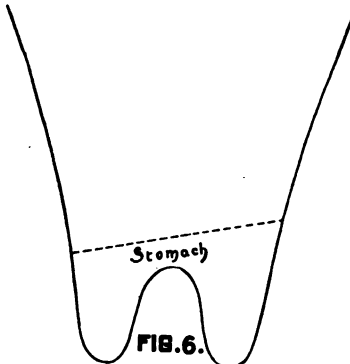


Fig. 6.—Fourth stomach contained 6 ounces.

Sketches of Position of Abomasum.—A trough was made of one-inch pine, ten inches wide, and placed in such a manner that one end rested on the ground and the other on a crutch. The upper end could be raised or lowered, thereby increasing or lessening the angle of the trough with the ground. The sheep were placed in this head downward. This apparatus was used to more easily control the animal, and to determine in what position of the sheep the fourth stomach, if possible, could be brought to a constant position in relation to the xiphoid cartilage, and other compartments of the stomach.

By carefully dissecting back the skin and group of abdominal muscles which lie in the region bounded by the sternum at one end and the two last ribs on each side until the peritoneum is reached the relative position of the rumen, reticulum and abomasum can generally be seen through the transparent peritoneum, except in very fat sheep. The following diagrams illustrate the variations in the position of the abomasum, and hence explain the difficulties of reaching this organ by means of the hypodermic needle.

There were four others of which, it was impossible to make a diagram of the fourth stomach, as this organ was too far forward to show through the peritoneum.

From the foregoing seventeen diagrams, taken from the cadaver, by introducing the needle just clear of the end of the xiphoid cartilage, it would theoretically have entered the abomasum nine times and missed it eight times, probably entering the reticulum in the latter cases.

In Figures 2, 4, 5, 6, and 7 my notes did not indicate whether the attempts to enter the abomasum were successful or not. In the other eleven figures the needle was introduced sixteen times, hitting the abomasum nine times and the reticulum six times, and one time probably the paunch, (Fig. 3).

Three of those that entered the reticulum did so at a point an inch or more behind extremity of the xiphoid and in the xiphoid angle. This would suggest that the best point of entrance is just clear of the xiphoid, or not more than a quarter of an inch within its border on the median line. In very young lambs, where the abomasum is proportionately larger than the other compartments of the stomach, it might not be so difficult as in the older sheep. However, this would require further investiga-

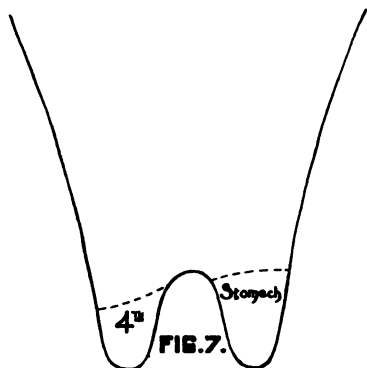


Fig. 7.—Fourth stomach contained 4 ounces.

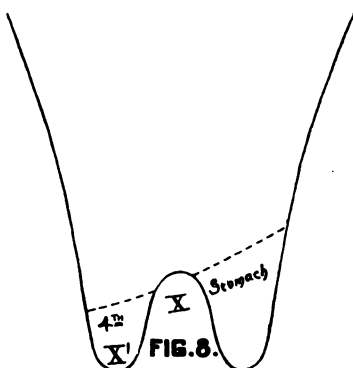


Fig. 8.—Fourth stomach contained 6 ounces. Hit fourth stomach at X and reticulum at X'.

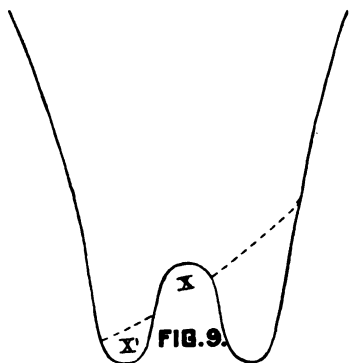


Fig. 9.—Hit fourth stomach at X and X'. It contained 10 ounces.

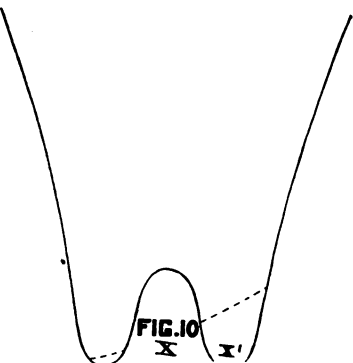


Fig. 10.—Hit fourth stomach at X and the reticulum at X'.

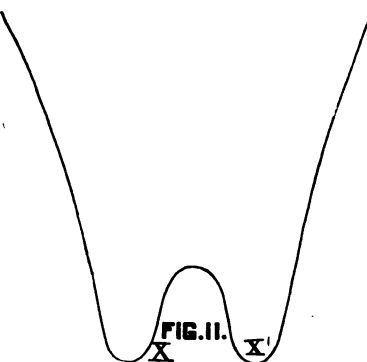


Fig. 11.—Hit fourth stomach at X and reticulum at X'. Fourth stomach did not show through peritoneum. It contained 4 ounces.

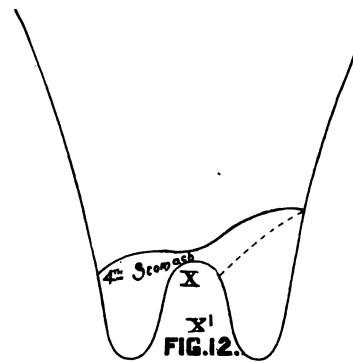


Fig. 12.—Hit fourth stomach at X and reticulum at X'. Fourth stomach contained 1 ounce, but the lungs were inflated, which accounts for position of fourth stomach. Lungs inflated with bicycle pump. The solid line shows posterior border of abomasum when the sheep was held at an angle of 85°, and the dotted line shows this border when held at an angle of 45°.

tion. In short, we may deduce from the above (at least theoretically) that we are warranted in expecting something over fifty per cent of successful results in introducing a five per cent solution of chloronaphtholeum, or creolin, by means of a hypodermic syringe with a three-inch needle directly into the abomasum, slanting the needle slightly backward and selecting as the point of entrance just behind the xiphoid cartilage.

There is, however, one serious objection to this method of administering the drug, and that is the danger of inducing an abscess at the point of entrance. In my experiments no care was taken to keep the needle clean; in fact, I was purposely careless in order to imitate as nearly as possible the utter disregard with which the average breeder would carry out the operation. I had one or two fatal cases, and some others that showed ill effects temporarily.

Gastrotomy.

I made an incision about two inches in length on the median line just behind the xiphoid cartilage, and stomach was pulled through opening and one ounce of pure chloronaphtholeum introduced with hypodermic, three stitches then taken. This was done September 7th. The lamb was killed October 28th, and the stomach was found full of worms. The fact that the worms were alive leads me to believe that I must have caught up the small intestines as the effect of the chloronaphtholeum was too certain in all other cases to fail in this one. However, the case proves one thing, and that is that this operation goes hard with sheep, especially when no precautions of asepsis are taken. There were many adhesions, and the stomach was drawn out of place by inflammatory growths when the lamb was destroyed a month later.

I operated on another lamb October 30th, introducing twenty drachms of five per cent solution of creolin directly into the stomach. The animal was destroyed twenty-four hours later, and all worms found dead. The dead worms in stomach were all black. There were a few living worms in the intestine.

I operated, about 10 a. m., in the same way on another lamb, introducing three drachms of tavola, in four ounces of water, directly into fourth stomach (worms came back through canula).

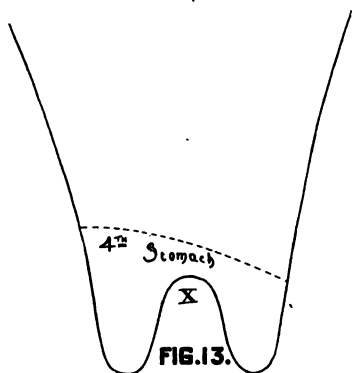


Fig. 13.—Hit abomasum at X, although there were only two ounces of contents. Abomasum did not show until lungs were inflated.

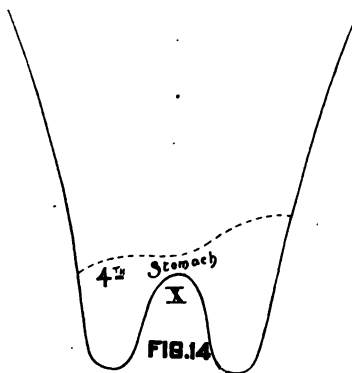


Fig. 14.—Hit abomasum at X. Only one-half ounce in fourth stomach, but there must have been some gas.

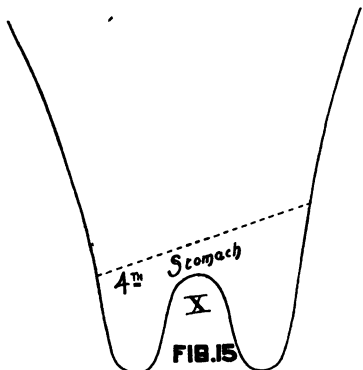


Fig. 15.—Hit reticulum at X. There was a small mark on fourth stomach. Needle must have hit the latter and glanced off. Three ounces in fourth stomach.

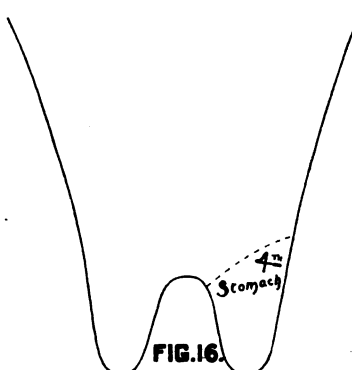


Fig. 16.—Hit abomasum at X. Twelve ounces in this organ, and yet it was very far forward.

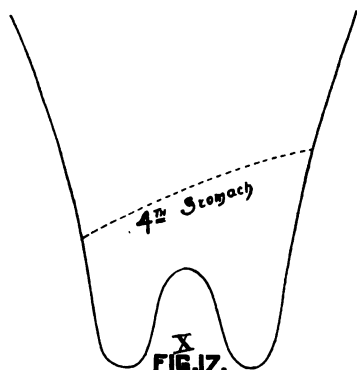


Fig. 17.—Hit reticulum at X. Abomasum far back and containing 8 ounces.

This lamb was in moribund condition when operated upon, and died 4 p. m. All worms (and there were hundreds) were dead when the fourth stomach was incised.

General Summary.

Turpentine, spigelia and senna, santonin, Summer's powders and gasoline are much inferior to creolin and various other coal tar products in their vermicial power.

The first group of drugs do not seem to be entitled to the position which they occupy as vermifuges in regard to the *Strongylus contortus*, certainly not as ordinarily administered to sheep; that is, when the animal is placed upon its haunches.

As the practice of introducing worm medicines by means of the hypodermic syringe through the skin and muscles of the abdominal cavity directly into the fourth stomach is accompanied by some danger, though successful in eradicating the worms in about fifty per cent of the cases, it would not be advisable to consider it of practical application to the sheep industry of the country, as it may be regarded as still in the experimental stage. On the other hand, the foregoing experiments do seem to point out to us that class of drugs commonly known as worm medicines are in need of revision, and in such revision an effort should be made to determine and build up a group of medicaments that would be vermicial to the various entozoa of domestic animal, without being toxic to the host, and that such a system should be placed upon a scientific footing by a careful and exhaustive series of experiments.

GLANDERS.*

J. G. RUTHERFORD, CHIEF VETERINARY INSPECTOR, OTTAWA,
CANADA.

I must apologize sincerely for not having a paper to read. I have, however, been more than a little busy the last few months, having had a good deal of official work to do, and I have also had a little work in connection with the anticipated pleasure of your society during the present week, and I really have not had an opportunity to write such a paper as I would care to present to the members of this association. I have been informed, and I presume my informants are men whose credibility is beyond question, that there are several members here who desire to hear what we are doing in Canada in regard to glanders. Now, I am fully aware of the difficulty and the danger of any man standing before an audience of his fellow professionals and speaking *ex tempore* upon any professional subject. I do not intend to say very much, and I intend to be very sure of what I am saying.

We have some glanders in Canada. There has been ever since I can remember a considerable amount of glanders in the Northwest Territories and in Manitoba. Outbreaks have also from time to time occurred in some of the other provinces, principally, I may say, in Ontario and Quebec, the Maritime Provinces having enjoyed a singular freedom from the disease. In Manitoba the provincial government has for nearly twenty years guarded in every possible way against the propagation of the disease. The work has been done thoroughly and well, and if it were not for the fact that there has been every now and then a recrudescence of the disease owing to the importation of unsuspected cases from the Northwest Territories, and I regret to say also from some of the northern states of the Union, I have no doubt but that the disease would have been stamped out long ago in Manitoba. It was in that province that I had my first experience with the use of mallein, ten years ago. We did not use mallein very long before we discovered that a number of

*Verbal address.

horses which reacted to the mallein test without showing clinical symptoms of glanders not only did not develop the disease but actually improved and lived out their natural lives. This was at first a rather startling discovery, and we have watched the matter very closely. In recent years experiments have been conducted in France, in England, and elsewhere in Europe, with mallein. I do not know whether you have all seen a report of the committee appointed by the British Board of Agriculture, in 1901, to experiment as regards the use of mallein in dealing with glanders, and also as to its curative properties, if any. This is a most interesting document, and I would recommend you all, if possible, to obtain a copy.

When I assumed control of veterinary matters in Ottawa last year I decided that I would adopt mallein as one of our most prominent agents in dealing with glanders. I do not know—I am subject to correction—of any other government having taken this step in the way in which we have. Our *modus operandi* is as follows: When we have a case of glanders reported to us one of our officers proceeds at once to make an investigation. As a rule, in an outbreak of that kind there is at least one clinical case,—one horse showing well marked clinical symptoms. If there is doubt about that horse, if the symptoms are not perfectly clear, he is submitted to the mallein test. If, on the other hand, the symptoms of disease are so clear that there can be no doubt, we do not waste any time with that horse. We put him out of the way at once, and use all the necessary and usual precautions in regard to the disposition of the carcass and disinfection of stables and of harness and other articles.

The horses which have been in contact with that horse and have had opportunities of coming in contact with it we test, and those horses which do not react we, as a rule, keep under observation, in case there should be later developments; but those which do react, and which do not show any clinical symptoms, we isolate from all horses which have not reacted to the mallein test. We forbid their being stabled in any premises excepting the mentioned and described premises of the owner. We forbid their sale or disposal in any way, and we demand that they shall be available at any and all times for inspection by our officers. As a further precaution we brand these horses on the near fore hoof with the letters "E, R.," which, I may say to you, citizens of the republic, are the official initials of the King, and the aver-

age British subject does not care to meddle very much with that brand. We brand on the hoof, so that when our officer goes back and wants to see any horse, and the owner says the horse is dead, he asks for the hoof with that brand, as a proof that the animal has not been sold or otherwise disposed of. We keep those horses in that way for forty days, and we retest at the end of that period. Such horses as reacted on the first test but did not react on the second test we still keep under control, but we do not insist upon their being isolated. We do not insist upon anything except that they are not to be sold or otherwise disposed of and that they are to be available for inspection by our officers.

Horses which react at the second test we keep on under the original restrictions. Sixty days afterwards we test again, and the horses which reacted to the first and second tests, but which do not react to the third test, we partially release, as I have already described. We remove all restrictions except those forbidding sale or disposal and those which require the production of the animals when we want them.

The horses which react at the third test we endeavor, if possible without friction or trouble, to get the owner to consent to have destroyed. We pay no compensation, and it is rather hard sometimes, where a poor man has a number of good looking, and to all appearance sound, horses, which never showed the slightest clinical evidence of glanders, to say that they must be killed. We do not like to be severe, and we are willing, so long as no symptoms are shown, to give the animals another chance, especially (and I want this emphasized) if we see any distinct improvement in the general health of the animal and in the temperatures taken at each succeeding test. We find an animal reacting at first test, with a temperature of 105 and over, with the swelling at the point of inoculation gradually increasing for forty-eight or sixty hours after injection, horse very stiff and sore, and greatly depressed. At the next test we may have a temperature of 103 to 104, with a very much smaller local reaction and very little or no swelling. At the third test we may find the horse, whose normal temperature may be 100, showing a temperature of 102, with a small local swelling,—sometimes no local swelling, and no pain on pressure. Well, we look on that animal as an improver, and we consider that he ought to be given a little further chance, and we keep all these horses for

ninety days longer. First the period of forty days, then a period of sixty days, and then in addition to that we have a further period of ninety days, and we test all these horses at all these different periods, dropping out as many as possible of the reactors at the third test,—dropping them, and putting it out of their power to do further harm; and if a horse continues to react at the fourth test, whether showing any clinical symptoms or not, we kill him also. A horse which does not react after 190 days to a careful test, even if he has reacted at one time or another after we began to test him, we look upon as comparatively safe. While it is my intention to keep a very close watch upon such horses, and prevent the sale of them until such time as the officer in charge feels that there is no danger, at the same time the consensus of evidence is strongly in favor of the theory that these horses are not in any way dangerous to other animals. I may state as a fact that, as in the cases reported upon by the British Board of Agriculture, and other authorities who have dealt with this matter, we invariably find, on post-mortem examination, the lesions of glanders in horses which have reacted, in the lungs and elsewhere. We also find the peculiar condition referred to by Mr. Hunting in horses which have recently reacted to mallein: the bloodshot appearance of the lungs, the pleura and the pericardium, and blood spots on the heart and other organs. In the ceased reactors, however, it is impossible to obtain cultures of the *Bacillus mallei* from these lesions, and it is impossible to infect other animals with glanders by inoculation with contents of these lesions. This has, I believe, been the experience of every one who has used mallein in dealing with glanders, and who has observed these points.

Now, I am not in a position yet to say, I don't want to say, and I don't want anybody to go away from this meeting under the impression that I say, or even that my words should leave the impression, that mallein is a cure for glanders. I am not going so far as to say that these horses are cured of glanders; but I hold that, so long as the work is conducted in a careful, conservative and practical way, the public interest being safeguarded as we are endeavoring to safeguard it, the system we have adopted is a fairly reasonable and satisfactory one.

You will recall that when mallein was first discovered there was an outbreak of glanders in Russia, I think, where a number of horses showing clinical symptoms were tested, and every one

reacted. As a further experiment, the horses which had been in contact with them, although apparently healthy, were tested, and to the surprise of the operator a considerable proportion reacted. These were killed and the lesions of glanders were found in the internal viscera.

On an adjoining government farm there had been an outbreak of glanders some years before, but no recent cases, the horses being all apparently healthy. They were tested, and a large number of them reacted. They were also killed, and in every reactor the glanders lesions were found in the internal organs. Now, these horses reacted to the mallein test. They had not shown any clinical symptoms of glanders, although they must have been affected for a number of years, owing to the history of the case. We find, on the other hand, that some horses with which we deal after being injected with mallein once or twice do not react, and the evidence is therefore strongly in favor of the theory that mallein exercises an arresting influence upon the disease. I might go on to a considerable length, but I have given you the main points in the work we have been doing. The results are very satisfactory. It is true that a limited number of these horses develop clinical symptoms while under our care, but these are promptly destroyed. We have a considerable number of ceased reactors that we are watching very closely in the meantime, and we will report later when the work is further advanced, and when we have a better opportunity of judging of results. At the same time I want to state that I do not think we are justified in being too sanguine in dealing with such a disease as glanders, and we must be careful and see that nobody is hurt, while at the same time carrying the matter as far as possible.

I want to say that, while doubtless this course of action may be subjected to some criticism, it is certainly very much better and safer than any policy I have ever known of, excepting perhaps the destruction of every horse reacting to mallein. I find, however, that those who know most about it are not in favor of such extreme measures as that. Under our system we take every clinical case of glanders and deal with it summarily; we test all horses that have been in contact with the disease, and those which react we isolate and keep under control, while under the old system they would never have been dealt with at all, but would have been allowed to go from place to place, and when

favorable circumstances occurred would have developed the disease and created new infective areas.

We do not assume anything; we take nothing for granted. We are as careful as we can be, and the system we are following is one which deserves watching, and we hope it will be watched by other people. If we find that it is not justified by results, and something better can be suggested, we intend to improve our ways, and do the best we can under all circumstances.

I do not wish to take up your time, but if there are any questions (for I have not gone as fully into the matter as if I had prepared a paper) I shall be glad to answer them if I can.

DISCUSSION.

DR. BERNS: I have been very much interested in this talk upon the subject of glanders, and I am gratified to see that the experience of Dr. Rutherford in dealing with this disease coincides with mine in almost every detail. Unfortunately, I have come in contact with a large number of cases of glanders during the last twenty-five years, and before the mallein test was thought of, when we had nothing but clinical symptoms to go by. When the clinical symptoms were sufficiently developed to warrant a diagnosis, our patients were destroyed, and according to the laws of the state we had to destroy them. When mallein was first introduced of course every suspicious horse was subjected to the mallein test. Then we started in to test horses which had been in contact with the suspicious horses or the glandered ones, and most of them reacted. We started in to kill off all horses that reacted, and post-mortem examinations were made in each of the first fifteen to twenty-five cases that I came in contact with. Tubercular lesions of glanders were found in every instance.

The disease broke out in another large stable. We had seven or eight horses showing physical symptoms; they were destroyed. There were twenty-eight other horses in the stable, all having been allowed to mingle with those which were killed, and these were all subjected to the mallein test, and I believe that every one of them reacted, and reacted to the extent of two, three, four or even five degrees. We started in to kill, and made post-mortem examinations, and the lesions were found every

time. But about six out of the twenty-eight were horses in excellent health, to all appearances, and I felt that I was not justified in killing those horses, by reason of the fact that if it was not for the mallein test nobody would have suspected them. Therefore those six horses were allowed to live; were retested later, and retested two and three times, and some of them are still living.

We had another outbreak in a stable of forty-two horses; and I could enumerate any number of instances, but my experience all the way through coincides with Dr. Rutherford's.

DR. KELLY: I might state that we have had similar experiences with the use of mallein,—that is, in retesting. A number of cases have been reported to the department of agriculture in New York, and where we have a number of cases we find one or two that show physical signs of disease. Those that show no physical signs of disease are put in quarantine under restrictions similar to those described by Dr. Rutherford. They are retested in a month or six weeks, and those which fail to react to the second test and do not show physical signs are released. This has been done in my experience in a number of cases. They have afterwards been watched, and I have never seen any recurrence. At the same time, the barn has been disinfected. New York State does not recompense owners for any animals suffering from any disease; hence this method was adopted, and so far is very successful. As to the curative properties of mallein, I do not know; but we hope to conduct some experiments.

I am glad they are doing the same thing in Canada,—that is, not killing because an animal reacts to the mallein.

DR. BELL: I presume that, at our next meeting, in St. Louis, we will hear more of the results from this work, and I would like to add something to it at that time by a report upon three horses that have just been the subject of the mallein test. About thirty days ago, in what we call a stall stable, where a number of expressmen keep their horses, the board of health destroyed two animals. One of these was in a stable with three other horses, belonging to one man. I think the horses they destroyed had farcy. The owner of these three horses, who was a client of mine, asked me to look after his interests, and I examined the three and found them absolutely free from clinical manifestations. They were normal in every way. They were in excellent condition and comparatively young, but he decided to

submit them to the mallein test, and the reaction that we received was considered by the board of health as particularly startling. They said the only way we could get a higher elevation was to get the roof off the stable. The local reaction at the point of inoculation was sufficient to make the animal carry his neck as stiff as though he had tetanus. I believe the swelling was as large as a man's head, and their temperature remained up for about five days, gradually going down, possibly a degree a day, the swelling being down the shoulder and under the breast. It took rather over a week before the horse was returned to its normal condition. In Brooklyn the board of health shows the veterinarian some courtesy in not taking charge of the stable where such cases are in charge of reputable veterinarians. They leave it upon our honor to report cases when we find them, and to take all precautions to prevent the spread of the disease. They do not come in and post up notices on the door and have the inspectors going in and branding them with "E. R.," as it is not considered essential by these owners. For instance, in the case of a milkman, or any one dealing in food products, they want to keep a reputation,—they cannot afford to lose business. Therefore the board of health leaves this in charge of the veterinarian, if he is a reputable man. At our next meeting if this subject is brought up again, I will be glad to report the condition of these three horses, as they will not be disposed of by sale. We will have supervision of them, and in case any physical symptoms are shown they will be destroyed.

DR. PIERCE: I might say that Massachusetts has been using the mallein test quite extensively in stables where there has been glanders infection. I believe that this work has been extending over a period of more than two years, and it was the intention of Dr. Roberts, who has charge of that branch, to submit a paper on this subject. Our experience has been similar to what has been submitted by others. We have had a large number of stables, containing from fifty to one hundred horses, and results have been as others have submitted.

DR. RUTHERFORD: I might say in regard to figures that we have tested during the last eighteen months some 872 horses, and of these 399 have reacted, 247 being destroyed. There were a number of horses destroyed on evidence of clinical symptoms only.

The number of horses which reacted and were destroyed was 111. I did not give you these figures when speaking before, but I want to show you that our experiments have not been limited, and that we have been carrying on a good deal of this work. I have listened with pleasure to the other gentlemen. I can understand Dr. Bell's objection to our perhaps peremptory methods of dealing with glanders, but I can assure Dr. Bell that I have been handling glanders for over twenty years, and I think it necessary to be peremptory with glanders and with owners of glandered horses, and not to consider their feelings too much. It may be all right in the Borough of Brooklyn to trust to a man's honor, but when you have a horse out on the boundless prairies of the West you must have a mark on him that will identify him. It is a great misfortune for a man to have a glandered horse, and we feel for him, but at the same time we do not intend to take chances of having another man's horses get glanders through any carelessness on our part.

DR. BELL: I think the doctor has misunderstood me. I did not mean that the board of health trusts to the owner of the horses. It trusts to the honor of the attending veterinarian.

DR. LOWE: I consider that Dr. Rutherford's address is a very important one, and of great interest to every practitioner. We have a large infected district in the northern part of New Jersey, taking in several of our largest cities and a number of the larger towns, and it is a large proposition to deal with. Whether we are successful in the attempt that we are now undertaking on behalf of the state of New Jersey is for the future to determine. I will be candid and report later to you our results.

DR. DOUGHERTY: I do not know that I have any question to ask Dr. Rutherford, but I would like to say a few words concerning work with glanders antedating the use of mallein. I have seen a great many cases of glanders; in the war I saw thousands of cases. In a large street car stable, where we had 600 horses, glanders broke out, and we lost sixty. It was of the most acute form, and there would be two or three or four or five cropping out every morning, and we killed until sixty were dead. I also had other cases, where there were about sixty horses in a stable. In the railroad stable I saw the first of these cases, and I put these horses on treatment. I did so in another stable, and I think that I arrested the disease in both stables, so that no more cases developed. I have used the same treatment

in smaller outbreaks since then, where I would have one or two cases in a stable, and apparently arrested the disease. I do not remember the exact formula, but it was iodide of potash and corrosive sublimate.

DR. LEECH: I am very much interested in this subject of glanders, and I am very glad to know that we are promised entertainment at the next session, and perhaps an all-day session. I do not like to take up time, but wish to ask Dr. Rutherford one question, and that is, what he has to say about that garden party.

DR. RUTHERFORD: In reply to Dr. Leech, I would say that there is nothing to prevent his going to the garden party at once.

MEAT AND MILK INSPECTION IN THE STATE OF MONTANA.

M. E. KNOWLES, HELENA, MONT.

Efficient meat and milk inspection is one of the most important sanitary measures confronting the people of this continent. The benefit of a most salutary system of government meat inspection has been thoroughly demonstrated under the very efficient direction of Dr. D. E. Salmon, but state control of meat and milk has been largely neglected throughout our country. So far as I am able to ascertain, Montana is the first state in the Union to attempt to put these matters under state control, or which has enacted laws that it is hoped will have a salutary effect and establish a precedent that may be greatly improved upon. Much good has been accomplished in many of our states through municipal meat and milk inspection, and the reduction of infant mortality in many of our cities since the establishment of milk inspection has been most gratifying; but it is extremely difficult to convince the lay public, and particularly legislators, of the necessity of placing meat and milk inspection on a competent basis, prescribing regulations sufficiently stringent to accomplish all the good possible. It does seem that state control of meat and milk inspection should offer the best results if properly administered under laws of sufficient scope, and it is the intention of this paper to give you a brief history of the attempt to secure this legislation for Montana and the results finally obtained. In 1897 the first meat and milk inspection bill was introduced in the Montana legislature by my friend, Senator Metzel, now deceased. This measure was defeated, but it embodied practically all the features of our present substitute for house bill No. 126 which passed our last legislature and was approved March 7, 1903. The second bill of a similar nature was introduced in our legislature of 1901. This bill provided for municipal inspectors, to be appointed by the mayors of the different cities of our state, and was made mandatory, with the unfortunate omission of a penalty for failure to comply with its

provisions. This bill proved a dead letter. In 1903 our present law embodied in house bill No. 126, of which there is appended a copy, was passed, as you will learn, placing meat and milk inspection under state control. It affords me much pleasure to advise you that this act is now in full force and effect, and that at present, under its operation, there are eight inspectors working. Our present law, both in its making and in its operation, has met with the same proverbial opposition from milk and meat men of the state that all such legislation has encountered in the past, and you all doubtless know that this opposition is no easy thing with which to contend. Immediately after the passage of house bill No. 126 the dairymen and butchers of Lewis and Clarke county, Montana, formed a local organization, with the ultimate end in view of making it a state organization, for the purpose of accumulating a fund sufficient to test the constitutionality of the law. They were not successful in securing the undivided aid of the dairymen and butchers in other counties of the state, but proceeded among themselves to collect sufficient funds to employ a firm of competent attorneys for the purpose of testing the constitutionality of the law. The license feature of the law was first attacked. Inspector Bradley of Lewis and Clarke county brought action against L. McKinney, a dairyman, for non-payment of license in Justice of the Peace Tibbet's court, and he was fined twenty-five dollars and costs. The case was promptly appealed to the district court, Judge Henry C. Smith presiding, and was there sustained. It is my understanding that the milkmen now propose to appeal this case to the supreme court. However, they have all paid their licenses rather than encounter prosecution and additional costs. Immediately upon the passage of the act and its signing by the governor, I requested Mr. T. J. Walsh, one of Montana's eminent attorneys, to give me a brief opinion upon the bill, a copy of which opinion is hereto appended, as is also a copy of Judge Henry C. Smith's opinion in the decision of the case entitled "State of Montana vs. L. McKinney, Defendant."

It was hoped that we would be able to secure a sufficient number of veterinarians to fill the positions of inspectors under this act, but this was found impossible; therefore, all the positions at present are being filled by physicians, who, I am happy to say, are endeavoring to give excellent service. I believe that all our present inspectors are working conscientiously and con-

sistently to bring about a better state of affairs, but are largely handicapped through lack of practical knowledge of the essentials of meat and milk inspection. The work so far has brought about a materially improved condition of the sanitary surroundings of both dairies and abattoirs, and a correspondingly improved milk and meat supply. In some localities of the state a small percentage of dairy cows are reacting to tuberculin. At the present time I am unable to give you the exact figures, but it is safe to say that it is much larger than should obtain in our most healthful climate and favorable surroundings.

HELENA, MONT., March 13, 1903.

Mr. T. J. Walsh, City.

DEAR SIR: I enclose you herewith copy of the meat and milk inspection bill recently passed by our legislature. Will you kindly advise me if there is anything in it unconstitutional, and in section 21 what are the full powers prescribed therein for the meat and milk inspection commission; that is, how far can we go in establishing rules and regulations, etc.? Can we appoint, in the event of not being able to find competent men within the state, some one not a resident of Montana to these offices? Will you kindly return this bill after looking it over, as it is the only one I have or shall be able to get.

Very truly your friend,

M. E. KNOWLES.

MONTANA MEAT AND MILK INSPECTION LAWS.

SUBSTITUTE FOR HOUSE BILL NO. 126.

AN ACT ENTITLED AN ACT TO CREATE THE OFFICE OF MEAT AND MILK INSPECTOR FOR THE STATE OF MONTANA, AND PRESCRIBING THEIR POWERS AND DUTIES AND COMPENSATION THEREFOR.

Be it Enacted by the Legislative Assembly of the State of Montana:

SECTION 1. The office of meat and milk inspector is hereby created in the State of Montana for the counties of the first, second and third class, and immediately on the passage of this act, the president and secretary of the state board of health and the state veterinarian shall appoint a meat and milk inspector for the counties of the first, second and third class, and when deemed necessary by the president and secretary of the state board of health and the state veterinarian, or upon the request of one hundred taxpayers in the counties of the fourth, fifth, sixth and seventh classes, they shall then appoint a meat and milk inspector for said counties of the fourth, fifth, sixth and seventh classes.

SEC. 2. Such meat and milk inspectors shall be designated deputy state veterinarians, and shall make report at the end of each calendar month to the state veterinarian of all things pertinent to their office, and shall also make an annual report at the end of the fiscal year, addressed to the state veterinarian.

Subdivision 1. Said inspectors of the counties of the first class shall receive an annual salary of two thousand dollars (\$2,000.00).

Inspectors of the second class counties shall receive one thousand five hundred dollars (\$1,500.00) annually; inspectors of the third class counties shall receive one thousand two hundred dollars (\$1,200.00) annually; inspectors of the fourth class counties shall receive one thousand dollars (\$1,000.00) annually; inspectors of the fifth class counties shall receive seven hundred and fifty dollars (\$750.00) annually; and inspectors of the sixth and seventh class counties shall receive six hundred dollars (\$600.00) annually, to be paid out of the general state fund monthly.

Subdivision 2. No person shall be appointed to the office of meat and milk inspector unless he is a graduate in good standing of some regular and reputable veterinary medical college, or of some regular and reputable medical college, or of a medical department of a university, and must be registered and admitted to practice in the State of Montana; and before such appointment he shall be required to exhibit his diploma as such graduate, and, if deemed necessary by the above mentioned board, he shall pass an examination before said board upon the specialty of meat and milk inspection.

SEC. 3. All inspectors appointed by the above mentioned board shall be under the direct supervision of the state veterinary surgeon, and for cause may be removed at any time by said board, consisting of the president and secretary of the state board of health and the state veterinarian.

Subdivision 4. The rules, regulations and methods of inspection adopted by the bureau of animal industry of the United States government, supplemented by any rules deemed necessary by the aforementioned board, shall be taken as the standard of meat inspection, and shall be followed as closely as may be consistent by said meat and milk inspectors appointed by said board, provided said inspectors are hereby empowered to enter any premises or any place whatsoever where animal food products are kept for sale, slaughter houses, markets, stores, or any building or premises of whatsoever character necessary for him to visit in the performance of his duties.

SEC. 5. The meat and milk inspector appointed by said board shall have the right to condemn any meat, carcasses, or parts of carcasses, poultry or fish, or parts thereof, or all cattle, sheep, swine, poultry, fish or any domestic animal whatsoever, intended for food for human consumption, which is found, after examination, to be unfit for food, and it shall be said inspector's duty to destroy all such contaminated meat or poultry or fish by slashing said meat or muscular tissue, or poultry or fish, or carcass, or parts of carcasses of any domestic animal whatsoever, in numerous places, with a knife, and into such incisions

said inspector shall then pour or inject with a suitable syringe sufficient kerosene to taint such meat or food product, and make it impossible to be used for human consumption.

SEC. 6. Any person, persons or corporations selling or dealing in fresh meats, fish and poultry, in counties in which a meat and milk inspector is appointed, shall annually, before the first day of June, register in the books of such inspector, and shall pay an inspection license to such meat and milk inspector, in the sum of fifteen dollars (\$15.00) per annum, payable quarterly in advance, and each and every wholesale and retail dealer handling, selling or dealing in fresh fish and poultry where fresh meats are not sold or dealt in shall pay an inspection license to such meat and milk inspector in the sum of four dollars (\$4.00) per annum, quarterly in advance, and all moneys so collected by said inspector shall be by him paid into the state treasury quarterly, as received, to be turned into the general fund, and receipted therefor by the treasurer to such inspector.

SEC. 7. It shall be unlawful to sell or offer for sale, buy or offer to buy, take or give away, for the purpose of food, any animal suffering from hog cholera, swine plague, charbon or anthrax, rabies, malignant epizootic catarrh, pyæmia or septicæmia, mange or scab in advanced stages, actinomycosis, or lumpy jaw, inflammation of the lungs, the intestines or peritoneum, Texas fever, extensive or generalized tuberculosis, animals in an advanced stage of pregnancy, or which have recently given birth to young, any disease or injury causing an elevation of the temperature or affecting the system of the animal to a degree which would make the flesh unfit for human food; any organ or part of the carcass which is badly bruised or affected by tuberculosis, actinomycosis, cancer, abscess, suppurating sores or tape worm cyst, poultry or fish or other animal food products in a decaying or putrid condition, or poultry suffering from tuberculosis or other general disease, animals too young and immature to produce wholesome food, distemper, glanders and farcy, or any other malignant disorder, acute inflammatory lameness and extensive fistula.

SEC. 8. Nothing in this act, or any paragraph thereof, shall be so construed as to interfere with the offerings for sale of any wholesome meats, bearing the stamp or tag indicating that the same has been inspected by the United States bureau of animal industry, or of any state or county, or municipal inspector. Provided, however, that if there is any reason to believe that such meat is in a putrid, decaying or unwholesome condition, it shall be said inspector's duty to inspect such meat whenever complaint is made to him relative thereto, or he personally has reason to believe that such conditions exist, and should he find such meat in a putrid, decaying condition, or preserved by chemical preservatives, or in any condition making it unwholesome for human consumption, it shall then be his duty to destroy such meat, as is herein provided.

SEC. 9. It shall be the duty of such meat and milk inspector to inspect each dairy supplying milk to the public in his county for human

consumption not less than once in every month during the calendar year, and it shall be the duty of such inspector to issue to each person, persons or corporations, supplying milk to the citizens of such counties of the State of Montana, a certificate of health every ninety days, which certificate of health shall include a certificate of the sanitary condition of such dairy.

SEC. 10. It shall be unlawful for any person or persons, company or corporation, to feed unwholesome food of whatsoever character to his dairy cows. Each dairyman, person, persons, company or corporation, supplying milk to the public, must have for each cow his certificate of health, including the tuberculin test made by said inspector, stating that each cow is free from tuberculosis or consumption, or any other infectious disease whatsoever.

SEC. 11. Whenever in the observation of the meat and milk inspector proper cleanliness of vehicles, utensils, pails, pans, or other utensils, used in the accumulating, handling or marketing of said milk is not up to the proper standard, it shall be the inspector's duty to prohibit the said person, persons or corporation from selling said milk, until such time as proper methods of cleanliness and precautions are used in the handling of said milk.

SEC. 12. All persons or corporations engaged in the dairy business and supplying milk to the citizens of the State of Montana shall keep their barns or stables free from filth or manure or other substances likely to harbor or favor the growth of disease producing germs therein, or about their stables or barns likely to be carried in, or to contaminate such milk or dairy product.

SEC. 13. Any resident of the State of Montana to whose knowledge or observation comes the fact that any dairyman, person, persons or corporation is supplying milk from any diseased cattle, or cattle fed on stable bedding, stable refuse, or any improper food of any character whatsoever, it shall be his duty to at once notify said inspector of such county, who shall at once visit the premises or place indicated, and if he finds said complaint true, it shall then be said inspector's duty to at once prohibit the future selling of the product of said dairy dealer or corporation, and to at once file an information against said dairyman, person or persons, corporations or dealer.

SEC. 14. Such inspector shall keep in his book of records, kept for the purpose, the names and place of business of all persons engaged in the sale of milk and cream within the county, and the inspector is hereby empowered to enter all places in which milk, cream, or dairy products are stored or offered for sale, and all vehicles used for the conveyance of milk or cream, and may take therefrom samples for analysis.

Subdivision 1. The inspector shall, upon request made at the time such sample is taken, take, seal and deliver to the owner or person from whose possession the milk or cream or dairy products are taken, a portion of each sample, and a receipt therefor shall be given.

Subdivision 2. The inspector shall analyze such sample, or otherwise satisfactorily test the same, and shall record and preserve such record

as evidence of the result thereof, but no evidence of the result of such analysis or test shall be received if the inspector, on request, refuses or neglects to seal and deliver a portion of the sample, taken as aforesaid, to the owner or person from whose possession it is taken.

SEC. 15. Any person, persons or corporation in counties in which a meat and milk inspector is appointed who conveys milk or cream in vehicles of any character whatsoever for the purpose of selling it in such counties shall annually, before the first day of June, be licensed by the meat and milk inspector of said county to sell milk and cream within the limits thereof, and shall pay to such inspector for each and every vehicle of whatsoever character used in the sale or delivery of such milk or cream or dairy product, the sum of twelve dollars (\$12.00) per annum, payable quarterly in advance, which sums shall be paid into the state treasury by such inspector quarterly, as received, to be turned into the general fund, and receipted therefor by said treasurer to said inspector.

Subdivision 1. Licenses shall be issued only in the name of the owner of the vehicles, carriages or other conveyances.

Subdivision 2. Such license shall, for the purposes of this act, be conclusive evidence of ownership, and shall not be assigned or transferred.

Subdivision 3. Each license shall contain the number thereof, the name, the residence, the place of business, the number of vehicles used by the person, persons or corporations, and the name of every driver or other person employed by the owner or owners in carrying, conveying or selling milk or cream.

Subdivision 4. Each person, persons or corporations shall, before engaging in the sale of milk or cream, or dairy products of any character whatsoever, cause his name and number of his license to be placed legibly on each outer side of all carriages, vehicles or conveyance of whatsoever character used by him in the conveyance for sale of milk or cream.

Subdivision 5. Every person or persons, company or corporation, before selling milk or cream, or offering the same for sale in a store, booth, stand, market-place, depot, or any place whatsoever, in a county in which a meat and milk inspector is appointed, shall register in the books of such inspector his or her name, or the name of the company or corporation, and proposed place of sale.

Subdivision 6. Nothing in section 15, with the exception of subdivision five, shall be construed to apply to dairies milking five cows, or less.

SEC. 16. Any person or persons, or servant or agents, or any other person who sells, exchanges, delivers, gives away, or has in his custody or possession, with intent to sell, exchange, or deliver, or give away or expose, or offer for sale or exchange adulterated milk or cream or milk or cream containing filth or dirt, or milk or cream to which water, boracic acid, salt, salicylic acid, and salicylate of sodium, formaldehyde, formaline, cornstarch, gelatine, isinglass, coloring matter, or any other extraneous substance has been added, or milk produced from cows which have been fed on swill or other improper food, or from sick or diseased cows, or whole milk from which the cream, or a part thereof, has been

removed, and whosoever sells, exchanges or delivers, or has in his custody or possession with intent to sell or exchange, deliver or give away, skimmed milk, containing less than nine per cent of milk solids, exclusive of fat, shall be deemed guilty of a misdemeanor, and shall be punished, as provided in section 23 of this act.

SEC. 17. On any prosecution under the provisions of this act milk upon which analysis is shown to contain less than twelve per cent of total solids, or less than nine per cent of solids exclusive of fats, or less than three per cent of fat, shall not be considered milk of good standard quality, and cream containing less than fifteen per cent of fat, which shall be the standard of quality for the State of Montana, shall not be considered cream of good standard quality.

SEC. 18. It shall be unlawful for any person, or persons, company or corporations, by his or their servant or servants, agent or agents, or as the servants or agents of any other person, persons or corporation, to sell or offer for sale, exchange or deliver, or give away, or have in his or her custody or possession with intent to sell, exchange or deliver, milk or cream which is not of good standard quality, as above prescribed.

SEC. 19. Any person, persons or corporation who, by his or their agent or agents, sells, exchanges, gives away or delivers, or has in his custody with intent to sell, exchange or deliver, milk from which the cream, or part thereof, has been removed, not having the words "Skimmed Milk" distinctly marked on a light ground in plain, dark, uncondensed Gothic letters, at least one inch in length, in a conspicuous place upon every receptacle, can or package, from, or in which such milk is contained, or is intended to be sold, exchanged, given away or delivered, shall be punished, as provided in section 23 of this act.

Subdivision 1. If such receptacle, can or package is of capacity of not more than two quarts, the said words may be placed upon a detachable label or tag attached thereto, and said letters may be less than one inch in length.

Subdivision 2. Any milk found in such receptacles, vessels or cans, containing more than one per cent of butter fat shall not be considered, within the meaning of this act, "Skimmed Milk."

SEC. 20. It shall be unlawful for any person or persons, company or corporation to cause, to make, or cause to be made, or use or have in his or her or their possession, an imitation or counterfeit of a seal used by the meat and milk inspector in the inspection of milk or cream, or to change or tamper with the sample taken or sealed by the said inspector.

Subdivision 1. It shall be unlawful for any meat or milk inspector, his servant or agent, to willfully obstruct or assist in the violation of the provisions of this act, or whoever hinders, obstructs or interferes with the meat and milk inspector, or his servant or agent, in the performance of his duty, shall be guilty of a misdemeanor.

Subdivision 2. The inspector shall prohibit the sale of milk by any person, persons, company or corporation supplying milk or cream or dairy products from crows that are permitted to drink contaminated or unwholesome water of any character whatsoever.

SEC. 21. The president and secretary of the state board of health and the state veterinarian are hereby empowered to establish any further rules and regulations necessary for the efficient management and carrying out of said inspection, and the regulations of the inspectors themselves.

SEC. 22. There is hereby appropriated the sum of one thousand dollars (\$1,000.00) for the purpose of buying such chemical and other apparatus as may be absolutely necessary for the purpose of each inspector in the chemical examination of meat and milk, together with buying and supplying such inspectors with the necessary record books, tags, labels, brands or marks, designated by the state veterinarian, to be paid for on approval of said board out of the said funds. Said apparatus shall be purchased by the president and secretary of the state board of health and state veterinarian, and be supplied to each county meat and milk inspector; provided, that no money shall be paid out of this fund except on the approval of said board and for the purposes above mentioned.

SEC. 23. Any person or persons, company or corporation who violates any of the provisions of this act shall be deemed guilty of a misdemeanor, and shall be punishable by a fine of not less than five dollars (\$5.00), nor more than three hundred dollars (\$300.00), or imprisonment in the county jail not less than ten or more than ninety days, for each separate offense, or by both such fine and imprisonment, and the continuance of such offense for any day shall be deemed a separate offense.

SEC. 24. Immediately after the appointment, and before taking office, such inspector shall file with the secretary of the state an oath of office, subscribed to by him, and file a bond for a sum equal to his annual salary, for the faithful performance of his duty. Said bond shall be furnished with good and sufficient sureties, and be approved by the secretary of state.

SEC. 25. All acts and parts of acts in conflict herewith are hereby repealed.

SEC. 26. This act shall take effect and be in force from and after its passage.

Approved March 7, 1903.

VIOATING LAWS FOR PUBLIC HEALTH.

SEC. 677. Every person who willfully violates any of the laws of this state, relating to the preservation of the public health, is, unless a different punishment is prescribed by this code, punishable by imprisonment in the county jail not exceeding one year, or by fine not exceeding one thousand dollars, or both.

FEEDING UNWHOLESOME FOOD.

SEC. 1095. Every person who keeps a cow or any animal for the production of milk in a crowded or unhealthy place or in a diseased

condition, or feeds such an animal upon any food that produces impure or unwholesome milk, is punishable by imprisonment in the county jail not exceeding three months, or by fine not exceeding two hundred dollars, or both.

(Circular No. 1.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, April 1, 1903.

To Meat and Milk Inspectors:

You are about to engage in the most important of all sanitary work and it is hoped you will have a full realization of the responsibility devolving upon you. The best results can only be obtained, and the best interests of the citizens of Montana properly subserved, by your willingness to give your duties your undivided attention, and there is no doubt if your work is properly accomplished, it will require substantially all your time. Your first duty on taking office will be to visit each dairy, milk market, milk depot, abattoir and all markets in your county dealing in fresh meats, poultry, fish or other animal food products, for the purpose of observing the exact condition in each. You will be expected to make full note on each individual visit to be transmitted in your preliminary report. In this report you shall give the exact sanitary and unsanitary conditions, together with all shortcomings and the recommendations you have made toward rectifying them. You will proceed at your earliest convenience to tuberculin-test every animal in each dairy throughout your district. For this purpose, immediately after your preliminary visit, please notify this office how many doses of tuberculin you will need. This tuberculin will be supplied to you from this office at the very earliest possible time after receipt of notification from you. All fresh cattle supplied to a tested herd must be kept isolated until you have tested them and the dairymen in your district must be so notified by you. In as far as possible, it is deemed advisable that you should make visits to the places requiring your attention without the knowledge of the owner that you are coming at a certain time. This only applies to dairies, and it will be necessary for you to ascertain at as early a date as possible the exact time and number of days that killing is done at the different abattoirs in your district. Make a special report on this subject to the board with your recommendations so that there can be arranged, if possible, a thorough inspection both before and after slaughter. The inspectors appointed will be required to provide for themselves proper conveyance for use in their duties and a microscope provided with 1-12 oil emersion objective and 1, $\frac{1}{2}$ and 1, $\frac{3}{8}$ objective and the necessary microscopic accessories. If applicant does not possess micro-

scope, he can procure one through this department at the discount given wholesale dealers. All chemical apparatus necessary will be furnished by the board.

WM. TREACY, *President.*
M. E. KNOWLES, *Secretary.*
THOS. D. TUTTLE.

(Circular No. 2.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, May 25, 1903

To Meat and Milk Inspectors:

In your first rounds you will please call attention to and emphasize the following to dairymen with whom you come in contact to the end that conditions may be pleasantly changed without too much friction.

The policy of the board will be to act conservatively in inspection until all interested citizens are familiar with the requirements of the bill. All dairymen should know that of all food products, those coming from the dairy, particularly milk, will absorb bad odors more readily than any other and will deteriorate most rapidly under unfavorable conditions. Milk is probably the most excellent of all media for the growth of bacteria and it is particularly urgent and an important part of your duty that this should be obviated to as great a degree as possible.

There is no other food product produced under similar conditions where it is so extremely difficult to prevent contamination. Since by far the largest amount of contamination comes from dirty udders during milking, it is imperative that all udders be washed before milking. It is claimed and proven by investigators that the average weight of dirt that falls from dirty udders during milking is 90 times greater than that which falls from the same udders after washing; and when udders are but slightly soiled, it averages 22 times greater, therefore, all cow's udders should be washed before milking.

All dairy cows must be kept out of the mud. Barn yards should have natural surface drainage and be covered with a coat of gravel or cinders of sufficient depth to form a hard surface at all seasons of the year. It is unnecessary to have stables of costly construction, but they must be provided with numerous windows to provide light and an efficient system of ventilation which supplies an adequate supply of fresh air without creating drafts. As whitewash is one of the best and cheapest disinfectants, it will be necessary for all dairymen to whitewash their stables at least twice a year.

To successfully accomplish this, the sides and ceiling must have a firm, tight surface to which whitewash can be readily applied. The floor of the stable must be smooth and tight, where possible preferably cement.

The platform on which the cows stand should be of only sufficient length to permit the droppings to go into the trough provided behind them and to prevent the cows from lying in the manure and soiling the udder. All stables must be cleaned regularly once a day and, if possible, twice.

Immediately after milk is drawn from the cow, it must be removed from the stable and aerated and cooled down at once to 50 degrees or below. All dairy utensils and every object with which the milk comes in contact must be rinsed thoroughly, washed thoroughly and sterilized after each using. Every dairy room and milk depot must have a solid impervious floor which must be well drained by being properly pitched to the gutter to which it is connected with a good system of surface drainage or well trapped sewerage.

The use of pumps in handling milk, if it exists, must be abolished and all milk be conveyed through open conductors. The practice of serving milk in individual packages, half pint, pint, quart and larger bottles for family use must be encouraged. However, the pernicious practice of carrying a can of milk along in a wagon and refilling empty bottles taken from residences en route must be abolished on account of the great danger of the dairymen conveying by this means from house to house contagious infantile and other diseases, particularly scarlet fever, diphtheria, mumps, chicken pox, etc.

After giving dairymen this notification and they are caught employing this practice, it will be your duty to file an information against them.

The habit of covering milk cans in open or closed vehicles with dirty horse blankets or woollen blankets of any character whatsoever must be abolished. Where necessary, milk cans may be covered with clean tarpaulin, but with no other cover in shape of textile fabric. No milk room must be permitted having any connection with a sleeping room, living room or stable. These changes must be made gradually and the dairymen convinced of the necessity therefor. You will take no radical action without consulting the board.

By MEAT AND MILK INSPECTION BOARD,
M. E. KNOWLES, *Secretary*.

(Circular No. 3.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, June 2, 1903.

To Meat and Milk Inspectors:

The Meat and Milk Inspection Board beg to advise that no milk will be permitted to be sold coming from dairies in which cows have not been inspected in accordance with the Meat and Milk Inspection Law. In cities where a person, persons or corporation is dealing in milk or cream

coming from another county in which there is no regularly appointed meat and milk inspector, it is ordered that such person, persons or corporation desiring to continue the sale of such milk or cream must bear the necessary traveling and incidental expense and pay \$5.00 per day for each day actually employed in such inspection to any available inspector the Meat and Milk Inspection Board may be able to send for such inspection, and such person, persons or corporation must make application in writing to the Meat and Milk Inspection Commission at Helena for the services of such inspector. On receipt of such application, the board will send the nearest available inspector to make the inspection so that the expense may be minimized as much as possible. The inspectors are instructed to give dealers in such milk sufficient time to make arrangements and application to the board for inspectors. However, all such applications and arrangements must be made before July 1st, 1903.

M. E. KNOWLES, *Secretary.*

(Circular No. 4.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, June 2, 1903.

To Meat and Milk Inspectors:

You will take notice that all hotels and restaurants will be regarded by the board as retailers of milk and subject to inspection. Wherever an inspector has reason to believe that hotels or restaurants are preserving or adulterating milk or cream, it will be said inspector's duty to enter such hotel or restaurant, and take samples for analysis as is provided for in the Meat and Milk Inspection Law.

M. E. KNOWLES, *Secretary.*

(Circular No. 5.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, June 2, 1903.

To Meat and Milk Inspectors:

It is ordered by the Meat and Milk Inspection Board that you pay particular attention to grocers or other persons or corporations retailing milk bought from countrymen, farmers, ranchers or other wholesalers

of milk, keeping record of their depots, taking from same samples for inspection and testing all cows supplying such milk. It will also be your duty to keep such farms, ranches or small dairies under direct supervision as is provided in the bill.

M. E. KNOWLES, *Secretary*.

(Circular No. 6.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, June 2, 1903.

To Meat and Milk Inspectors:

It is ordered that all meats killed or distributed by rabbis or other religious sect must be inspected and treated in the same manner as other butchers' products.

M. E. KNOWLES, *Secretary*.

(Circular No. 7.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

HELENA, MONTANA, June 6, 1903.

To Meat and Milk Inspectors:

It is ordered that all persons milking five cows or less or delivering milk in conveyances of any character whatsoever where no license is paid, must mark in plain letters on both outer sides of such conveyance the following word that must be sufficiently large to be easily read: "Unlicensed."

M. E. KNOWLES, *Secretary*.

(Circular No. 8.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

Directions for Inspecting Herds for Tuberculosis.

HELENA, MONTANA, June 24, 1903.

To Meat and Milk Inspectors:

It is imperative that uniformity be observed by meat and milk inspectors in examining and testing dairy herds for tuberculosis, and while it

is not the desire to interfere with approved methods, the following plan is recommended to all meat and milk inspectors:

The herd should be stabled during the time the inspection is being made. However, it is not an absolute essential in warm weather if the cattle can be tied or kept quietly in a small paddock. If it is necessary to stable animals under unusual conditions or among unusual surroundings that make them uneasy and excited, the tuberculin test must be postponed until the cattle are accustomed to the changed conditions to which they are subjected.

The herd should be fed and watered as usual during the test, excepting in winter.

The animals must not be allowed to drink freely of cold water less than one hour before temperature measurements.

The inspection should begin with a careful physical examination of each animal. This is imperative, for the reason that in many advanced cases of tuberculosis no reaction will follow the injection of tuberculin; experience has shown that these cases can be readily discovered by a careful physical examination.

This examination should be complete and include a most careful examination of the udder and of the superficial lymphatic glands and a careful auscultation of the lungs.

Each animal must be numbered and described in such a way that it can be recognized with little difficulty and without question.

Where cows stand in the same stall at all times, it is well to number the stall with chalk, and if the cattle are haltered, place a corresponding number on the halter, in addition to which it is well to tie a substantial tag onto the halter or around the neck with a corresponding number, all of which numbers must correspond to the number on the temperature sheet so that each animal's temperature may be recorded in its appropriate place without danger of mistake or confusion.

The following procedure will give excellent results:

1. Take ante-injection temperatures every two hours for the twelve hours preceding injection in accord with temperature chart supplied by this department.

2. Inject tuberculin in the evening between the hours of 7 and 9. The injection must be made with a carefully sterilized antitoxin syringe. The dose must be carefully graduated; the most convenient point for injection being back of the left scapula. Prior to the injection, the skin should be carefully washed with a five per cent solution of creolin or some other appropriate antiseptic.

3. The first post injection temperature must be taken not later than nine hours after the injection and temperature measurements, repeated at intervals of two hours for not less than 15 hours after the taking of the first post injection temperature.

4. Where there is no elevation of temperature at this time, the examination may be discontinued; but if the temperature shows an upward tendency, measurements must be continued until a distinct reaction is apparent or until temperature begins to fall.

5. If a reaction is apparent after taking the third or fourth post injection temperature, the measurement of temperature must be continued to give complete chart record.

6. The thermometer used for this work must be an accurate, tested thermometer, and if several are used, they must be compared before examination.

7. If there is an unusual change of temperature in the stable or a sudden change of weather, this fact must be recorded on the report blank.

8. If a cow is in a febrile condition when the initial ante-injection temperatures are taken, tuberculin must not be used on her, for the reason that in such cases the temperature curve is irregular, and the result of the test uncertain.

9. Calves under three months old must not be tested, as results under this age are unsatisfactory.

10. In old emaciated animals and in retests, use twice the usual dose of tuberculin or more according to the condition.

11. In reporting upon the examination of a herd, the large temperature sheet must be filled out and returned to this office, together with a more detailed record for each animal proving tuberculous. This detailed report should be made out on the individual report blank which will be provided for this purpose.

12. Each reacting animal must be promptly isolated from the herd and branded on the left jaw with a letter "T" two inches across by three inches in length.

13. In making post mortems, the carcasses must be thoroughly inspected and all diseased organs noted on the blank be fully recorded.

14. After the completion of the inspection and isolation of diseased animals from the herd, the buildings and surroundings must be thoroughly disinfected in accordance with special instructions for this work contained in Circular No. 9.

This must be done under the supervision of the inspector and must be carried out with the closest attention to details.

The inspector will be expected to furnish a copy of disinfection instructions to each dairyman or owner of herd inspected.

15. Compare maximum normal and maximum reaction temperature and if the difference equals 1.5 F. or more, tuberculosis is to be assumed.

If the difference between the maximum and post injection temperature is less than 1.5 F. it is probable that the animal is free from tuberculosis.

16. Where there is any question or doubt in your mind relative to a reaction, you will isolate the animal and retest after one month.

17. The effect of tuberculin on the flow or quality of milk is immaterial, providing there is no reaction. If there is the slightest evidence of reaction in any cow, the use of milk from such cow must be interdicted.

18. The single or repeated injection of tuberculin on healthy cattle is not injurious to such cattle, a fact that has been proven beyond question by repeated investigations by the most accredited investigators.

M. E. KNOWLES, *Secretary.*

(Circular No. 9.)

MONTANA STATE VETERINARY DEPARTMENT.

MEAT AND MILK INSPECTION SECTION.

Rules for Disinfection.

HELENA, MONTANA, June 24, 1903.

To Meat and Milk Inspectors:

1. Permit entrance to all stables of a plentiful amount of sunlight. Disease-producing germs are promptly destroyed by the direct rays of the sun in a short time. They are destroyed by less intense light more slowly, but live for long periods in dark places. Remember that the cheapest and best disinfectant is sunlight.

2. Clean the stable thoroughly. Disinfectants do not destroy germs that they do not come in contact with and in order to permit the disinfectants used subsequently to come in contact with all the surfaces that may harbor disease-producing germs, it is essential that these surfaces should be uncovered by the removal of the dirt that has accumulated over them. The cleansing of the stable includes, first, the removal of all manure; second, the removal of piles of hay and fodder; third, thoroughly sweeping the ceiling, walls and floors; fourth, removal of all rotten woodwork and loose boards, especially of the floor; fifth, the removal of dried accumulations about mangers, floor and drains; sixth, scrubbing mangers, feed boxes, stalls and partitions, which should be done by boiling hot water and lye.

3. Apply chemical disinfectants. After the stable has been thoroughly cleaned as above required, then apply chemical disinfectants. Carbolic acid mixed with water in the proportion of 1 to 20 parts or 1 pint to 2½ gallons of water, to which sufficient lime is added to make it show where it is applied, is efficient, and should be applied to every part of the stable. Formalin or formaldehyde is also an efficient disinfectant and should be applied in conjunction with whitewash as is the carbolic acid, to make it show where applied.

4. All dairies and dairy buildings should be whitewashed not less than twice a year, and in all cases whitewash must be used after disinfection.

5. Allow stable to remain perfectly empty, if possible, after disinfection for several weeks. If this is not possible, then admit all the fresh air that can be gotten into the stable by leaving the doors and windows open. If barns or stables are of but little value and impossible to disinfect, advise burning them down. All litter and old woodwork removed from infected stables must be burned.

M. E. KNOWLES, *Secretary.*

HELENA, MONT., March 16, 1903.

Dr. M. E. Knowles, City.

DEAR SIR: I have examined the meat and milk inspection bill, and am satisfied that in its main features no objection can be successfully urged to it on constitutional grounds. There may be some subordinate features in respect to which it may be found inoperative. For instance, it makes contraband all skim milk not containing nine per cent of solid matter. Unless such milk is necessarily or probably injurious to health it is undoubtedly an article of commerce, and its sale cannot be prohibited. I take it that the fact that it contains less than nine per cent solid matter affords evidence that it is impure, but I do not think that feature can be upheld unless it is shown that such deficiency of solids affords presumptive evidence of its unsanitariness.

I entertain no doubt whatever that you may appoint non-residents to the positions of inspectors. At least, by taking up their residence in the state after appointment their right to hold the office could not be questioned, and this they would be obliged to do to discharge their duties.

As to the section giving the board power to make rules, you will perceive that it is by its very terms extremely limited. In the first place, the board may make rules and regulations "necessary (not proper or necessary) for the efficient management and carrying out of said inspection." Now, the bill provides for a number of things besides inspection; for instance, it provides for the destruction of infected meat. I doubt greatly your power to make any further provision for the destruction of condemned articles. Then this section ends "and the regulations of the inspectors themselves;" that is, the board may make rules for the carrying out of the regulations of the inspectors. But the inspectors are nowhere to make any regulations. So I should say that part of section 21 is nugatory. This section should have given power to make such rules as are necessary or proper for carrying out efficiently the purposes of the act.

Of the power of the legislature to rest in the board the right to destroy merchandise deleterious to the public health there is no longer room for doubt, and so long as the inspectors or board act in good faith they cannot be held liable even though they err in judgment.

Hoping these views may be of some service to you in carrying out this law which promises so much for the public health, I remain,

Faithfully yours,

T. J. WALSH.

IN THE DISTRICT COURT OF THE FIRST JUDICIAL DISTRICT OF THE STATE OF MONTANA IN AND FOR THE COUNTY OF LEWIS AND CLARKE.

THE STATE OF MONTANA VS L. McKINNEY, DEFENDANT.

This is a criminal action against the defendant, charging him with selling milk without a license. He has filed a general demurrer to the

complaint, alleging that said complaint does not state facts sufficient to constitute a cause of action, and his counsel has very ingeniously and ably argued that said law is unconstitutional. The law which is the subject of attack is entitled "An Act to Create the Office of Meat and Milk Inspector for the State of Montana, and Prescribing Their Powers and Duties and Compensation Therefor."

I have examined said act very carefully in the light of authorities cited by defendant's counsel, and with much aid from the very thorough and exhaustive brief of the county attorney.

Said law is one of the most salutary in its operation and effect of any of its kind I have ever examined, and as a measure looking to the preservation of the public health is greatly to be commended. As a matter of law its constitutionality is to be upheld if possible. It is undoubtedly within the police power to regulate the manufacture and sale of articles of food, even though the right to manufacture and sell such articles is a natural right guaranteed by the constitution.

The sale of meat and milk that is not up to a certain standard may be prohibited, and for the preservation of health and cleanliness the state may regulate the sale of these articles.

I am of the opinion that the law in question is a proper exercise of the police power. In this connection I cannot refrain from quoting from the brief of the county attorney in the case of the State vs. Broadbelt from the Maryland court of appeals as follows:

"The entire act is strictly a police regulation, enacted for the purpose of preserving the public health. The strides which our knowledge of bacteriology has made in recent years are generally known, and the ubiquitous microbe has been shown to be a potent agent in the propagation of disease. Tuberculosis (identical, it is said, with consumption in man) is caused by the organism known as 'Koch's bacillus,' and is readily communicable through milk. Diphtheria is another contagious disease whose specific organism finds in milk favorable conditions of growth, and there is abundant evidence to show that contaminated milk transmits this contagion. Cholera has again and again been traced to the same source, and scarlet fever is generally believed to be communicable by infected milk, and it is said that it may be even caused by an eruption on the udder. Typhoid fever bacilli have been detected in milk supposed to be wholesome. Besides conveying disease, milk occasionally contains certain germs which form poisonous products known as 'ptomaines.' Milk may carry the bacilli of these and perhaps other deadly diseases to infancy, to adolescence, and to age, the delicate and the robust alike; and to persons in every class and condition of society. It may receive these germs direct from the cow, if the cow be unhealthy; or it may absorb them from the dairy, the dairy utensils, or the stable, if these be uncleanly. Thorough inspections of cattle and dairies may reduce the frequency of infection. The preservation of the public health by preventing the sale of infected milk or of milk that may come from infected source, when milk, by reason of its almost universal use, in one form or another, as an article of food, is especially likely to spread disease, is one of the most imperative duties of the state, and obviously one most incontestably within the scope of the police power. As a means to that end,—the preservation of the public health,—a requirement that every person selling milk for consumption in cities, towns and villages shall cause his herd or cattle to be registered with live stock sanitary board is a reasonable and appropriate enactment; and the subsequent provisions are necessary parts of the scheme."

2. I am of opinion that the fee imposed for carrying on the business of selling milk under this act is strictly for the purpose of regulation, and is a license imposed by virtue of the police power, and is not a fee exacted for the purpose of raising revenue. It is therefore not a tax. The amount of this license does not appear to be unreasonable in view of its purpose as a regulation.

3. The defendant insists that this act is unconstitutional in so far as it gives authority to the meat and milk inspector to collect the licenses, and cites in support thereof the case of the Mutual Life Ins. Co. vs. Martien, recently decided by the supreme court of this state. In that case the court held that the county treasurer was the only proper collector of taxes. As this is not a tax but a license, it was clearly within the power of the legislature to designate the meat and milk inspector as the person to receive said license and pay it into the state treasury.

4. The defendant also claims that the act is unconstitutional on the ground that the title of the act is not broad enough to cover the subject-matter contained therein. In this connection it is only necessary to cite the case of the State vs. Berheim, 19 Mont. 512. In that case the court says:

"Experience amply demonstrates that to regulate a particular business by law, and put a statute regulating it into practical and effective operation, there must be punishments prescribed and imposed upon those who violate its commands. But such penalties need not be included in the title, for they are but ends and means necessary or convenient for the accomplishment for the general object."

It is therefore ordered that the demurrer of the defendant to the complaint herein be and the same is hereby overruled.

By the Court,

HENRY C. SMITH,
District Judge.

Dated July 30, 1903.

DISCUSSION.

DR. KELLY: I may be permitted to say that the State of New York has a statute providing that adulterated milk shall not be sold, and defining adulterated milk. If my memory serves me right, the requirements are: That milk must contain at least three per cent of butter fat; it must be drawn from healthy cows; it must not be drawn from cows kept under unsanitary conditions; it must not be drawn from cows ten days prior and ten days after parturition; it must not be drawn from cows fed upon distillery waste or any kind of unhealthy food. To enforce this statute it is made

the duty of the commissioner of agriculture to appoint milk inspectors to take samples of milk. If the samples contain less than three per cent fat, the attorney general is authorized to bring action against the offending party. If guilty the offender is subject to a fine of not less than forty dollars nor more than one hundred dollars. In a recent case, where a person was charged with violating this law, and where the entire output was sold to one party, the court held that where an inspector took samples of milk and one of the cans of milk (or two of the cans, I forget which) indicated according to the lactometer that some cream had been removed it was necessary to take a composite sample of the entire milk. The court held that, as this man was selling his entire milk to a creamery, he had not committed an offense under the statutes, as the sample was not taken for the entire milk, and the state was non-suited. It was carried up, and the decision of the court sustained. It was held that, where an individual sells the entire output to one person, or to a creamery, you must take a composite sample of the entire product to make a legal case. They also found out in enforcing this law of three per cent fat that some dairies (very few, though) will fall a little below three per cent. Therefore they had to amend their law. I think this was about two or three years ago. The law reads now that if one of the inspectors takes a sample of milk from a person selling it, in ten days' time he shall return to the dairy whence this milk came and take a herd sample; that is, the inspector must see all the animals of that dairy milked, and then take a composite sample of that milk. If this sample of milk is better than the sample which was taken of the milk he was selling upon the street or in the store, then a case has been made out. But if it is the same quality there is no cause of action, but if the herd sample is higher there is cause for action.

DR. KNOWLES: I would like to ask Dr. Kelly what are the inspector's requirements.

DR. KELLY: The requirements of an inspector are such as are prescribed by the civil service examination. In the State of New York no one can receive compensation over \$300 annually unless they pass a civil service examination. The civil service commission holds these examinations for milk and butter experts.

DR. KNOWLES: One more question. Do you have any regulation relative to the inspection of cattle and dairies as to cleanliness?

DR. KELLY: I don't know as I can remember the wording of the law in that regard, but in substance it is that milk shall not be drawn from cattle kept in a crowded place or in an unhealthy condition. Some of the veterinarians connected with the department of agriculture make barn inspections. Such is not always the case. In some cases the milk inspectors are sent around, and they have blank slips to fill out as to the condition of the animals, number of cubic feet of air space, the disposition of the manure, amount of light and ventilation and where the milk is kept.

In this connection I might also explain that one of the provisions of the law defines what shall constitute adulterated milk. I have previously stated some of the provisions. It includes also the introduction of any foreign substance, such as boracic acid, or coloring matter. Milk from which cream has been removed or into which water has been introduced is also considered adulterated milk.

DR. BAKER: I want to say that the city council of Chicago passed an ordinance not long ago providing for the inspection of our milk supply. Among other things it prescribed that cans containing skimmed milk which was offered for sale should be painted red. I think that is an improvement upon the lettering of the cans. The lettering might be turned around and hidden from the view of the purchaser, and if the cans are otherwise all alike the innocent buyer might not see the lettering. If the can is red he cannot be deceived.

DR. KNOWLES: I should think that would be objectionable from a sanitary point of view. You cannot sterilize such a can as perfectly as you can one that is of plain galvanized iron, or tin, or some other substance which is enameled. That would be the only objection I would have to the Chicago method.

I would like to ask Dr. Baker if it is not true that the first five years of milk inspection in Chicago reduced the infant mortality 28 per cent?

DR. BAKER: Yes, I think it is. And they are carrying it out now to a greater extent. It is doing a great amount of good. The milkmen opposed it very strongly at first, but they are com-

ing to accept it now very gracefully, and I believe it is going to work out with great success.

In regard to the painting of the cans, you understand they are painted only on the outside. That would not interfere with the sterilization of the cans on the inside.

DR. KNOWLES: Experience shows that it does, Doctor.

DR. BAKER: Well, if that is the case, most of the milk cans are usually dirty on the outside. No matter how clean they may be on the inside, they don't usually sterilize them on the outside.

DR. KNOWLES: The fact remains that any dirt or filth around the milk receptacles is likely, under certain conditions, to contaminate that milk, and experience has shown that it does do it. Such is not only my experience, but it is the experience of men who have been investigators of the subject, and who have made milk inspection a study for years and years.

DR. KELLY: I might say relative to meat inspection in the State of New York, that there is no law in reference to that except a law prohibiting the sale of calves under the age of four weeks.

DR. SALMON: Dr. Knowles spoke in the last part of his paper about the inspectors returning eighteen and twenty per cent in the case of two cities, and thirty per cent in the case of two other cities. I would like to have Dr. Knowles' statement as to what he means by that. Twenty per cent of what? Tubercular dairy cows?

DR. KNOWLES: Eighteen to twenty per cent reacted in two cities, and the thirty per cent in two other cities in Montana.

DR. SIMPSON: I would like to ask Dr. Knowles if there is any provision in that act for any change in the winter and summer months in the standing of milk.

DR. KNOWLES: No, there is no provision for that. We put the percentage low enough to cover all those conditions. We believe that milk should come up to twelve per cent total solids and three per cent fat the year round. The fact is that most of the milk analyzed in our state to-day will show four and four and one-half per cent fat in dairy cattle, and thirteen and fourteen per cent of total solids.

I haven't heard any discussion concerning men suitable for these positions. I have always felt that the only suitable meat and milk inspector was the veterinary surgeon. To perform all the duties of his office, and perform them as he should, the

inspector must be a very well educated man. He must be something of a chemist; he must be something of a bacteriologist, and he must be preëminently a practical man. I believe that our colleges should make more meat and milk inspectors. The public will realize ultimately the necessity for veterinary meat and milk inspectors. These positions should not be held by laymen or physicians; although, as I said in my paper, there are human physicians that are acting as inspectors and are doing creditable work. I would like to see more of this sort of legislation; and after seeing what Dr. Salmon has accomplished in federal meat inspection, there should be great encouragement for us all to get state control of matters of this sort.

DR. SALMON: I do not feel that I can discuss this bill very intelligently because there is so much of it, and so much of it is technical legal matter that one would be obliged to have it in his hands and before his eyes in order to discuss it intelligently. Dr. Knowles has accomplished a great deal in getting such a bill as that through the legislature, and in doing so much toward getting the work well started. There is one point in which we are all especially interested, and that is the question that Dr. Knowles raised in his remarks as to the kind of men who should be appointed as inspectors. I do not think that there can be two opinions in an association of this kind in regard to the character of the inspectors. They should, of course, be veterinarians who understand the diseases of animals, and who can look upon the questions which come up in the performance of their duties from a veterinarian's point of view. But it is questionable whether a large number of inspectors who are veterinarians and who are qualified to inspect meat and milk can be obtained to carry out the provisions of such a bill. We see a tendency in the various states to pass legislation requiring expert inspectors to do this work, but we do not find that the veterinary educational institutions are turning out an increased supply of veterinarians to fill those positions. In the Bureau of Animal Industry we have constantly had trouble to get a sufficient number of inspectors for the work we are carrying on. The veterinarians who pass the civil service examinations get \$1,200 per year. That is not a large sum, but it is better than college graduates in general get; it is better than physicians get who go into the army, when they are first appointed. It really is a good salary for a young man who has just graduated from an educational

institution where he can get his diploma in three years. In the course of the next three years these inspectors get an increase of \$200, making \$1,400, and in the next two years they get an increase of another \$100, making \$1,500, and then if they show themselves specially qualified they may be selected for certain places where the salaries run up to \$1,500 and \$1,800, and even \$2,500. It seems to me that, in this service, although the salaries are not exorbitant, there is a good field for young men, and one which should be an inducement to them to enter the veterinary profession well qualified. I believe that, taking the average compensation which they get in the bureau of animal industry, they are doing better than graduates of other technical schools and better than men in other professions which in the past have been more popular. It is a strange thing to me that there are not more young men fitting themselves for these positions. Of those who graduate from veterinary schools, perhaps fifty per cent fail in the civil service examination, and yet these examinations are not especially stringent. These new laws regarding meat and milk inspection, which are being passed by the states, will require especial qualifications, as Dr. Knowles has said, which most veterinarians do not have. I see no reason why a veterinary student should not be instructed in milk testing, as it is not so distinct from the veterinarian's other studies. He could very easily master this work and be qualified to perform all the duties connected with the inspection of milk and meat, which really belong to veterinary sanitary science. It is unfortunate that some of our veterinary schools are turning out men without giving them the full course which this association has a right to expect. Some schools which pretend to be three-year schools, which pretend to be following the requirements of this association, really evade to a certain extent, and I should be glad to see this association take action looking to the fulfilment of the requirements of the association by all graduates and inspectors who look to this association for membership. We have recently had men certified to us by civil service commission as having passed the examination who were graduates of three-year colleges, which had graduated these men when they had been in the institution but a single year. These men had been admitted to advanced standing, entering the senior class, although they had not been in any other veterinary institution.

I hold that no man can perform veterinary service of a high character unless he has been in the veterinary school at least two years. I think that schools should not admit a man to an advanced standing beyond the second year unless he has had veterinary studies in some other veterinary institution. I do not believe a man can cram up on this veterinary literature and go out and do good work, and I bring this up at this time because I think we should do something to secure a course at all of the veterinary colleges which are recognized by this association which will be really equivalent to a three years' veterinary course, and which will require that all men will be in two years before graduation.

DR. TAIT BUTLER: I wish to congratulate Dr. Knowles on placing the salaries of his inspectors at the point he has, and I wish to make a few observations in regard to the point made by Dr. Salmon concerning salaries in the bureau of animal industry. I once took the civil service examination and succeeded in passing. I have seen the subject from the other side, having done the actual work, wading about in the blood and filth on the floors and standing among the hogs as they were going on the scales. The reason that Dr. Salmon has had difficulty in getting the kind of men he wants (and I would say in parenthesis that he has not put the standard too high) is because the salaries are too low. They are too low, notwithstanding the fact that they are higher than can be secured in other lines of work; they are too low because the kind of work has something to do with the getting of men to do it. The man in practice making \$1,200 per year is not bound down day after day without any opportunity to get off, and he has more pleasant work. That is why Dr. Salmon does not get the men he wants. I grant him that the colleges are not educating men for the work he requires; but I never heard of meat inspection when I went to college, and I certainly did not have any trouble in passing the meat inspection examination. There are hundreds of others who would do just as I did if the salary was sufficient. We have heard from Dr. Salmon that inspectors get a raise of from \$1,200 to \$1,400 in three years, and that in two years more they get a raise of another \$100. I believe that there are very few, comparatively, getting above that grade. There are quite a number in the aggregate, but when we compare them with the number that are

not getting above that amount, you see the reason why more men are not going into the service. The chances of getting above \$1,500 are too slight to induce good men to enter. When we take that into consideration, and the character of the work, and the close application required, then I say, in my experience, it is no wonder at all that Dr. Salmon is having difficulty in getting men, and I do not believe he will ever get good men in sufficient numbers until better salaries are paid.

DR. SALMON: While I am perfectly willing to admit that it is desirable that there should be larger salaries paid in the inspection work, and I have been working for years to secure funds with which it could be done, still I am not quite willing to accept the conclusion of Dr. Butler that there are hundreds of qualified men who would take these positions if the higher salary were paid. My reason for thinking this is that when the war department recently appointed men at \$1,500 and \$1,800, they have not found them outside the bureau of animal industry, but have come into our force for the men to fill these positions; when the war department wanted men to go to the Philippines, they did not get them outside of our force, but they took men from our inspection force. From that I think there are not such a number of men scattered over the country capable of filling the positions even if better salaries were paid.

DR. HOSKINS: I wish to express my great interest in the various important bills which this legislature has passed in Montana. I remember to have had correspondence with Dr. Knowles when he found himself in the dilemma of not having in his state, veterinarians ready to accept both positions, or even being able to find men sufficiently well equipped outside the state who could go there and pass the necessary examination in order to fill those positions. I look upon this just as Dr. Salmon does, and think that our schools are not giving thorough instruction in this work that affords so large a field for new men. We older graduates did not receive any education or training along these lines that would fit us to take up these positions even if we were disposed. It is now time for more thorough courses of instruction in these lines by the schools of this country. I certainly agree with Dr. Salmon that the salary of \$1,200 is most encouraging. It required me to put three years in practice before I reached that income, and with a great amount of expense. You

take the fields of engineering, medicine, pharmacy, and almost any of the other professional lines, and the great majority of those who enter them spend their entire lives without reaching the salaries obtained to-day by the majority of the inspectors of the bureau of animal industry.

DR. BUTLER: I wish to say in explanation that Dr. Salmon did not quite take my remarks as I intended them. I did not make the statement that there were men ready to fill these positions if higher salaries were offered, but that if sufficient salary were paid so they would feel that they were justified in preparing for this sanitary work they would do so. I would say further that, if the salary was sufficient, the colleges would do more towards preparing men for those positions. The other point raised by Dr. Salmon, that the army when it wants men gets them from the bureau of animal industry, is not at all surprising. We know that the average practitioner is not qualified for this sort of work. We know that a man cannot cover both fields and do it properly, and consequently when the army wants men of course it goes to the only place it can get them in the United States, and that does not apply at all to my remarks regarding the reason for the scarcity of men in this sort of work. I wish to say that those who regard \$1,200 a year a sufficient salary for that work are correct if there were the same opportunities for advancement that there are in other lines. Dr. Hoskins, for instance, did not tell us how much above \$1,200 or \$1,500 he has made during later years in his practice, while nine out of ten bureau inspectors never get above those amounts. Not only that, but Dr. Hoskins has never seen the work from the meat inspector's side, and never did the work six days in the week and fifty-two weeks in the year through the blood and dirt. Consequently he sees it from the outside, not from the side of the men who have gone into it. The men who go into any profession are the men who are responsible for the recruits to that profession. If the men in meat inspection to-day liked it as well as they do veterinary practice; if they regarded the salaries as sufficient for the work and requirements, they would recruit Dr. Salmon's ranks more rapidly by advising men to go into it.

DR. LAW: I believe a word should be said from the standpoint of the teacher. I believe I have stated that none of our

graduates have had difficulty with the examinations, either for meat inspectors or the army. At the same time I am free to say they do not get the education they should have in this line. I feel very much as Dr. Butler. Open the way for them and men will be had. I am tempted to pay a compliment to the Iowa State College, which has just extended its course to four years. It is something I wanted to do in our course, and did not dare. It is something we ought to do. We have not sufficient time, even with nine months to the year. We have not time in three years to make the kind of men that ought to be made and fit them for appointments of this kind in meat and milk inspection.

In the matter of pay, I think that both of the positions are probably right. I find that men in other departments of the university look with envy upon our men stepping out with their degree at the end of three years and getting a place at \$1,200 a year. If the man is going into these particular fields he must be a microscopist, a bacteriologist, and must be kept more or less in work in this line. He must be a chemist, and must not get very rusty in that. It would be well if you could get the enthusiastic men who take their work for the love of it, and give them something better,—better prospects and more leisure. I think there would be no difficulty in the schools bringing up the standard provided we have good enough prospects for the men who are graduated.

There is just one other point. The schools cannot furnish the men to-morrow; cannot furnish the men next year. It takes time to make those men.

DR. SALMON: I do not wish to have men discouraged from entering the bureau of animal industry. Dr. Butler evidently feels very seriously the hard work which the inspectors have to do, but I think he has somewhat exaggerated. The majority of the men do not have to work fifty-two weeks in the year; they have two weeks vacation. It is true vacations were somewhat damaged by the legislature a few years ago. They could have vacation where no expense was involved to the government. This made it necessary for some men to lose their vacation in places where few men are employed and where there are no men to take their place when they are given a vacation. In all large places, Chicago, Kansas City, etc., we have been able to make arrangements for vacations without any additional expense to

the government, and while it is true that at some places the hours are long, in other places they are not so long; in some cases they are rather short. So that, when you come to average the whole thing, I do not think that the hours are any longer in this service than they are in any kind of work. I believe a man in general practice puts in more hours a day than ninety per cent of our inspectors. I believe also that when men in general practice go for a vacation he has to lose his time, and our men do not lose their time. I would be glad to see higher salaries paid, and have been working to that end, and shall continue to do so. There is one other point, and that is where these new inspection laws are passed, making positions with higher salaries, these states are going to look to the bureau of animal industry for their men. That is another way the men in the bureau can get advancement, and if you take into consideration the very considerable number of men who have been taken from our service as Dr. Butler was, you will see that the chances for promotion are greater than you would understand from the remarks he has made.

DR. LEECH: I would like to ask Dr. Salmon if it is not a fact that in the large places where they have those arrangements for the men, that it is customary for the men who are on their vacation to have some other men do their work.

DR. SALMON: Certainly, that is what I explained; that it was in large places that we had men who could do the duty for the men who went on vacation. Then I failed to say that where the hours are shorter the inducement is greater.

DR. KNOWLES: This discussion seems to have taken a wrong trail. It has degenerated into a discussion of the bureau of animal industry and its salaries. They have said something about meat inspection, but very little about milk inspection. I think the imperfect system of inspection in Chicago demonstrates that under competent veterinary inspection the reduction of mortality would be still greater. This is a matter of vital importance because the veterinary's greatest work in the future will be that of the sanitarium, and I should have liked to have this discussed from that point. We tried to put the salaries high enough. I ask that if anything more is said that it be confined to the bill and not to salaries.

A QUESTION RELATING TO THE SERUM-THERAPY OF THE APHTHA EPIZOOTICA—ITS ACTUAL STATE.*†

PROF. EDOARDO PERRONCITO, TURIN, ITALY.

The serum and hemo-therapy,¹ which, two years ago, under our direction, worked miracles in the Novara province in the fight against the epizootic aphtha, seemed for a while buried under the criticism of partisans and cunningly interested persons. But, as it always happens with things which are good and well founded, it has now arisen under better auspices.

Doubtless it is to Löffler and Ecker that the merit belongs of having been the first to experiment with the serum-therapy in order to prevent and fight the aphtha epizootica in animals, especially cattle, sheep and pigs. Löffler especially, being generously aided by the German government, has confronted the grave questions for several years, and after having demonstrated certain very important properties of the "aphthous-virus," experimented extensively on the serum-therapy of the aphtha. But the immunity thus obtained from serum being weak and of short duration, he attempted to reinforce it with "serum-aphthina," i. e., with serum of animals subjected to immunity, to which he added virulent lymph, directly extracted from the vesicles of the aphtha. Yet, notwithstanding this modification, the results were not encouraging; on the contrary, the practical effects in some places were little less than disastrous, so that the eminent experimentator returned to the study of simple serum-therapy.

*A communication made to the Royal Academy of Agriculture of Turin, at its assemblage, May 29, 1903. Translation by Aladino A. Antilio, Philadelphia, Pa.

†Read by title, the author being absent.

¹E. Perroncito: On the Hemo-therapy and Hemo-prophylaxis of the Aphtha-epizootica, etc. R. Acc. di Med. di Torino, Adunanza del 3 Maggio, 1901; R. Soc. Naz. di Veterinaria, Seduta del 1° Giugno, 1901; R. Acc. di Agric., Seduta del 14 Luglio, 1901.

Nocard and Leclainche² epitomized these labors of Löffler in the following sentence, that we are happy to reproduce: "The serum of the immunized animals possesses very weak properties, and the passive immunity conferred is of short duration."

The most active serum immunizes cattle only with the dose of .4 of cc. per kilogram of living weight, requiring 240 cc. for a 600 kilogram cow. The refractory condition persists, on an average, for fourteen days only. The insufficiency of the method is evident, and it had been necessary to seek for a process of immunization both active and durable. The check to the serum-aphthine, however, has determined a return toward serum-therapy, which has, at least, the advantage of being harmless. Löffler and Uhlenhuth³ recognize that the prevention by serum is impractical with cattle, but they think it may be useful with sheep and pigs. They inoculate, under the skin, from 5 to 20 cc., following the ages and weights of the subjects. It is recommended to raise the dose with little pigs, as they are very sensitive to the aphthous virus. The advantages of preventive serum-therapy with small animals are too feeble to compensate for the high expenditure of intervention. The period of immunization is too short to make sure that a single intervention may absolutely preserve the subjects exposed, and the repetition of the treatment is too costly to be recommended.⁴

But in the issue of May 1, 1903, of the *Recueil de Médecine Vétérinaire*, in regard to the anti-aphthous serum, is found: "On March 12th last E. Nocard delivered a lecture, under the chairmanship of Foex and Magnien, general commissioners of the exhibition, in the buildings of the general agricultural exhibition, in order to demonstrate the advantages and the efficacy of the anti-aphthous serum."

Every year, at the time of the exhibition, the animals were carefully examined as to their health. Notwithstanding this, however, during the show, the infection always appeared on a certain number of animals, and this clearly came from the fact

²E. Nocard and E. Leclainche: *Les Maladies Microbiennes des Animaux*. t. I, pag. 580, 3d edition.

³Löffler u. Uhlenhut: *Ueber die Schutzimpfung Gegen die M. und K.* (Berl. thierarztl. Woch., p. 613, 1900). See *Centralbl. für Bakter.* Heft XXIX p. 19, 1901.

⁴E. Nocard and E. Leclainche: *Work and page quoted.*

that some owners, farmers, cowboys or cattle traders, who pass as "connoisseurs," imported the malady in germ from the locality whence they came. It is against this danger that we must provide.

For two consecutive years Nocard and Roux, aided by Valles and Carré, diligently continued their researches on the epizootic aphtha in the institute erected for this purpose at the Alfort school. But they have not yet succeeded in discovering nor cultivating the microbe which would have allowed them, doubtless, to obtain an efficient vaccine or serum.

Furthermore, they have recognized, as Löffler has done, that the serum of healed animals possesses a certain activity for immunization, but that it is necessary to inject a very large quantity of serum (up to cc. 1000). But the fact remains that such injections strengthen immunity, and the A. A. have succeeded in obtaining a serum which, at the dose of 20 cc., preserves cattle against the effects of an inoculation much larger than that which normally infects the animals. These results of the laboratory, confirmed by practice, give evidence of their importance, and constitute the best criterion of their value.

Unfortunately, however, the anti-aphthous serum-therapy which has immediate immunizing action lasts only a fortnight. Furthermore it is impossible to utilize this method in cases of epizootis, for the dose of 20 cc. ought to be injected on every beast every fifteen days, necessitating an enormous quantity of serum.

But, as far as exhibitions are concerned, the services rendered by such inoculations are more than sufficient and practical, for in this way the owners and the traders avoid the danger of receiving back their cattle infected by epizootic aphtha.

As I have already said, Löffler, in one of his reports,⁵ dated 1901, had indicated a new process to obtain, in cattle, an immunity of a certain duration against the epizootic aphtha. This method consisted in the intravenous inoculation of old lymph become inactive by having been preserved in a refrigerator. This lymph was mixed in the dose of .2 cc. with .1, .2 up to .3 cc. of new lymph, exposed for five minutes to the temperature of 60° C. in order to kill the germs.

⁵Löffler: Berl. Thierärztliche Woch., March 28, 1903.

The animals thus vaccinated, being placed in an infected stable, remained, in the greater part, uninfected for a week and a half to three weeks. Those which contracted aphtha after ten to fourteen days presented an eruption of a benign nature in the mouth and on the tongue. The results would therefore be apparently satisfactory; however, the experiments made had shown: (1) That immunity manifested itself only after a given period. (2) That the lymph reached too high a price in proportion to the immunity produced, which was not sufficient to prevent the development of aphthous epizootis in a determined region. These considerations had induced Löffler to abandon for a moment the trodden way, and direct his researches to the discovery of a serum which could prevent infection.

Each of four calves was inoculated directly into the vein with .01 cc. of fresh and very virulent lymph. As soon as the temperature had reached 40° C. (in less than twenty-two to thirty hours) there were inoculated in the same way 20, 50, 100, 200 cc. of serum taken from a cow already treated by progressive doses of lymph. The first two, which had respectively 20 and 50 cc. of serum, contracted a benign form of epizootic aphtha, while the other two, which had 100 to 200 cc. of serum, remaining completely untouched. Encouraged by this experiment, they produced the intensified immunization of cattle which were to serve for the preparation of serum by progressive doses of lymph. To this end they used lymph obtained from cultures upon young pigs, which are very well adapted for such work.

The serum taken from cattle was tried with success on other cattle. The dose established was 75 to 100 cc. Now, with this dose he obtained, in most of the animals, such an immunization that they remained untouched for more than a month, in infected stables. Some had the disease still, but in a mild form. From 200 cc. the dose was lowered to 60 cc., then to 50 and 20 cc., but these two last doses have not been proved surely preventive, and nearly half the animals inoculated contracted the disease. Yet, encouraged by these results, Löffler started to study practically the immunizing effects of this serum. A series of aphthous epizooties allowed him a good chance, and in his report of 1901 he was able to formulate this conclusion. Now, it is almost safe to affirm that the new bovine serum furnished a practical medium by which we may henceforth fight and over-

come this pest. However, it is necessary still to continue the studies with the serum in question, and to try, above all, its efficacy on the malignant forms of epizootic aphtha, which cause so many losses to the breeder of South Germany.

Evidently Löffler had not yet known of our labors, otherwise he would have seen that, even in the cases of aggravated and malignant aphtha, the question of serum-therapy or hemo-therapy was solved. It will be sufficient to read the new work already quoted, "On the Hemo-therapy and Hemoprophylaxis of Epizootic Aphtha," in order to be thoroughly persuaded. Our studies, which resulted so fortunately in 1901, were performed essentially on an epizootic aphtha.

In 1902 Löffler, starting from the observed facts, sought to determine the degree of immunity conferred upon cattle by the established dose of 100 cc. of serum; i. e., the quantity of virulent lymph the cattle would be able to stand when subjected to intravenous injection of 100 cc. of serum. This dose was supposed, practically, to confer immunity against epizootic aphtha upon nearly all bovines.

To this end he chose a series of cattle of nearly the same weight and development. Into each of these he injected 100 cc. of serum, and after twenty-four hours he subjected them to a gradual injection of virulent lymph, so that some he inoculated with .01 cc., others with .02 cc., or .05, .1, .2 and .3 cc. Thus Löffler established that the best serum neutralized the virulence of .2 cc. of lymph. This is indeed an enormous dose of virus, when we think that, generally .00005 cc., and even .000025 cc., of virulent lymph is sufficient to infect a healthy cow, even acting on a desquamated epidermic surface, with subjects slightly contaminated; and if the vaccinated animal is placed near a sick one, with large aphthae in its mouth, especially on its tongue, calculating that the quantity of virulent lymph produced and spread by the saliva of this last may be elevated to several cc., it is useless to remember that, in these circumstances, the 100 cc. of serum will not confer upon the vaccinated animal such an immunity as to be able to resist the infection which threatens it. From this come the failures registered in the course of vaccinations performed in 1901. On the contrary, these very same experiments have shown that repeated doses of serum, less than 100 cc. and reduced even to 20 cc., confer immunity to the ani-

imals in a stable undoubtedly infected, on the condition that it be sought to prevent the direct infection of the vaccinated cattle, through water, feed, or virulent saliva, and that the vaccination be performed before the infection happens through the saliva.

Experiments still under way are directed toward the solution verifying the problem as to whether doses from 5 to 10 cc. of serum are sufficient to immunize cattle against the natural infection due to a weak quantity of lymph.

The researches of Löffler have evidently a great practical importance. In the fight against aphtha he recommends compulsory vaccination of all cattle admitted to the markets, and for all those coming from foreign parts or from an infected center. From Löffler's exposition it is clear that the creation of a special institute for the preparation of a serum which may be sold at low prices would be the needed corollary of this sanitary innovation, which he thinks simple and of easy realization. I fully agree with this last conclusion; for without a center of production of serum, or hemo-aphthine, both owners and veterinarians would remain in the same uncertain position not knowing where to turn, neither knowing how to prevent infection, nor even how to rationally treat their cattle against aphtha. The cases of maglinant aphtha happily cured with hemo-aphthine were very numerous in the Novara province. This treatment was initiated by myself, and continued under the direction of Drs. Bono and Tabusso, as recorded in their special publications.

The hemo-aphthine is prepared from the blood of cattle repeatedly inoculated, or aphthoized, with lymph or materials of infected animals, or, better, with blood of cattle which have overcome aggravated or malignant aphtha, and which possibly have been reinoculated several times with aphthous virus (lymph gathered from vesicles of the aphtha, diluted or undiluted with physiologic salt solution passed through a Chamberland or Berkefeld candle) in order to obtain saturation of the organism, as is done in the preparation of the serum against charbon or hemo-anthroxine, which for some time has been prepared and experimented with successfully in cattle, in cases of mortality, before or after the charbonous vaccination, when this is practiced while the charbonous epizootis is already manifested.

The blood of animals immunized against aphtha is defibrinated gradually, while it is being gathered aseptically by means of

an incision or by collecting the blood of the animal which is slaughtered, and filtered through aseptic absorbent cotton, while from three to four per cent of sulphuric ether and seventy-five per cent of formalin (as it comes from the pharmacies) are added to it. Thus the liquid immunizing preparation, called by me hemo-aphthine, may be kept for a long time, and is used in subcutaneous injections in the proportion of 1 or .5 cc. (or even less) for every kilogram of net weight of the animal. That is to say, at the dose of 20, 50, 100, 200, 300 grams per head, according to the weight of the animal to be inoculated, and the degree of preparation of the animal which has served to the production of the hemo-aphthine.

And now, a few practical illustrations, which I take from my preceding special work, published in 1901, and already referred to in the margin:

On April 3, 1901, Senator Faraggiana had invited me to visit his farm of Castellazzo, where there were eighty cows, two bulls and some calves attacked by aphtha, seven days before, i. e., on March 27th. On April 1st a cow had died, on the 2nd another, on the 4th four others, and during the nights of the 4th and 5th two more. I proposed without delay to inoculate the new preparation, hemo-aphthine, and on the evening of the 5th, with Dr. Del Bono, sanitary officer of Novara, and with the veterinary doctors Bertone and Binotti, and with the sanitary guard, we went together to Castellazzo, to the farm.

There we chose twenty-eight cows, more gravely stricken, and we subjected them all to the inoculation of the new preparation, hemo-aphthine, to be compared with the others which had a more benign aphtha and were diligently treated by the ordinary methods. The injections began at 20:35 o'clock (i. e., 8:35 p. m.) of the 5th, and ended about 2 a. m. of the 6th. The results thus obtained seemed a revelation, for the cows, which had not eaten for eight days, immediately began to eat, some of them only thirty minutes after the inoculation, and the improvement was relatively so rapid that it aroused great enthusiasm among the farmers, who had been frightened by the terrible pest.

Since then we continued the inoculations with other material, prepared in the same way, and in the same proportion, upon the other infected animals.

Signor Malinveni of Collobiano Vercellese, who had a stable with about one hundred cattle, had already lost forty cows, six

young cows and eight calves. Of twenty-four cows stricken, six had recently died, two on April 5th, two on the 6th and two on the 7th. Of sixteen calves stricken, six had died also. After the injection of hemo-aphthine in the established proportion, i. e., about 300 grams for the cows, and 75 to 100 grams for the young cows and calves, we noticed here also the quick resumption of the eating process, vivacity and entire health, within a few days.

At St. Bartholomew of Vercelli, of more than twenty-five cattle, six had already died, two cows on the 10th and 11th, two on the 12th, and one on April 14, 1901.

The nineteen young and old cows, subjected to inoculation of proportioned doses of hemo-aphthine, were all cured in a short time, with the exception of a cow gravely affected with tuberculosis, which afterward was sent to me at my laboratory in Turin, and served for experimentations and studies. On the same evening of the 14th, with Drs. Tambornino and Borge, veterinary doctors of Vercelli, I inoculated also six healthy cows of the same proprietor, placed in a separate stable, at the end of the yard of the same farm, with 300 grams of liquid, leaving full liberty to the persons to go in the stable where the cows were kept.

None of them contracted the disease; therefore they were regarded as immunized against the very malignant aphtha, due to the common means of contamination, as those alluded to by Löffler, and which, as they had been ignored by him, he would still experiment and study.

In that stable I had also the occasion to make an important observation relative to immunity. The stable was very roomy and comprehended two parts, communicating with each other, only divided by the entrance door (right and left), so that the left contained the cattle belonging to the proprietor, twenty-five in number, the right those of a Lombard gentleman of Bergamo, coming from the province of Como, near Lecco, from Val Sassina. The cattle of the proprietor, which had not yet had aphtha, were all gravely infected, and had the losses already indicated. The cows of the Lombard gentleman, numbering forty, which had aphtha last year, remained perfectly immune, while sixteen young and old cows which had not yet suffered from aphtha and were mixed among them, contracted the disease, and two died.

Therefore also the remaining were inoculated with a curative dose of hemo-aphthine, with perfect success.

Dr. Tambornino, veterinary doctor of Vercelli, has made trials of immunization, using hemo-aphthine which I supplied. He proceeded in his experiment as follows:

Having chosen two cows, coming from a well known healthy stable, after a day of rest in a disinfected room of the slaughter house, he inoculated them under the skin with a gram of hemo-aphthine for each kilogram of weight of the dead animal, deducting the intestines as I had suggested to him. Eight days having elapsed, and having always established the normal temperature of the two animals, on the ninth day he proceeded along to the aphthoisation by means of saliva and secretion taken a few hours before from various cows among the most gravely stricken with malignant aphtha on a farm a little distance from Vercelli.

Four days later the symptoms characteristic of the disease were manifested in one, and six days later in the other. In both, however, the disease was of a benignant form. The two beasts continued to eat hay, notwithstanding they presented aphthae at the mouth and feet, and without any care they were quickly healed. Evidently the hemo-aphthine did not produce a complete immunization, which, however, was overcome only by a great quantity of virus artificially inoculated by the aphthoisation process.

Now, by the researches of Löffler we can explain why Dr. Tambornino could not obtain the complete immunity in the two animals on which he experimented, and why, on the contrary, it was obtained in my trial made at St. Bartholomew of Vercelli, on the six cattle not yet affected by aphtha.

In that same memorandum Dr. Tambornino described the excellent results obtained in the cure of the malignant aphtha, by means of the same hemo-aphthine, on more than 150 head of cattle of different ages.

For all this, it seems to me that the time has already come when the greatest impulse must be given to the serum-therapy of the epizootic aphtha, or, better, to the hemo-therapy, in order to obtain a material of easier preparation, and cheaper, too, especially in our country, where the aphtha is making such a frequent appearance, followed by great damages.

ANTHRAX AND BLACKLEG.

**CHAS. H. HIGGINS, PATHOLOGIST DEPARTMENT OF AGRICULTURE.
OTTAWA, CANADA.**

The title of my paper was not selected on account of its scientific value, nor on account of any original work accomplished by the writer in connection with either affection, but rather with a view to giving to the general practitioner a comprehensive idea of the differences between these two affections, which will enable him to more easily make a correct diagnosis, thereby causing a financial gain, not only to himself but to his client as well.

Some criticism may be offered at the commonplace term used, "blackleg," but I consider this advisable, owing to the idea which has gained ground in some sections, and I am sorry to say by some professional men, that the two diseases are similar in their nature and require similar methods of inoculation for their prevention.

The history of either disease can be traced back through the preceding centuries with little difficulty, even though the exact nature of the affection was an unknown quantity. At the present time, though the perfection of our microscopes, we are able to detect the infective agent, not only of these two diseases, but those of the majority of contagious diseases of man and animals. It is then apparent that we are indebted to the perfection of our microscopes, not only for the detection of the infective agents of the contagious diseases, but also for our present knowledge of their prophylaxis and preventive treatment.

To deal progressively with these two affections, I will cite circumstances which the country practitioner is liable at any time to encounter in the regular routine of his practice. His services are required immediately; some cattle are dead, others are in a dying condition; the owner or owners are excited, and owing to the quick onset of the disease, and the almost total absence of symptoms, immediately suspect poisoning by a near neighbor, with whom they are at loggerheads. A careful and quick diagnosis is imperative, not only for the protection of the other animals on the farm, but, if the case be anthrax, for the protection

of the human beings who may come in contact with the animals or their products after death.

In anthrax the diagnosis may be established by the short duration of the illness. The animal may be of any age or variety, and, as a rule, appears in perfect health the night before, being found dead, or nearly so, in the morning. There is usually a bloody discharge from the nostrils and anus. This in itself should arouse suspicions, and make one particularly careful in handling the carcass, that he may avoid infecting himself or others, or distribute the infection over the ground when removing the carcass to a suitable place for burial. If there is still doubt, a few drops of blood may be obtained on a clean piece of note paper, allowed to dry in the air before being folded, and forwarded by mail to a laboratory for microscopic examination, which examination will yield positive results.

If it is necessary to confirm the diagnosis immediately, an autopsy may be performed, but it must be borne in mind that this is a very dangerous procedure, and one which can usually be dispensed with even in the most remote sections.

At an autopsy on a case of anthrax, hemorrhages may be noted throughout all the tissues and organs of the body. The spleen will be greatly enlarged, and very dark in color. The blood flows freely, is of a dark color, and does not coagulate. The carcass of such an animal should be destroyed by fire as soon as the diagnosis is made or suspected, care being taken that all discharges and litter about the animal be burned with it, even to the halter. The animal should, under no consideration, be skinned, as this is a most dangerous procedure; nor should it be dragged over the whole farm, with a chain around its neck or leg, that a spot may be found where the digging is easy, for by this means the infection is very effectually spread, contaminating any enclosure through which the animal may be drawn.

Blackleg is a disease of bovines, and is seen more often in animals from six months to four years old. Its onset may be slightly slower than that of anthrax, the first symptom usually being lameness. Later an emphysematous condition of the skin covering the muscles is noticed, which gives an increased size to the quarter affected, and a crackling sound similar to the rustling of paper is produced when the hand is passed over the area. As a rule, there is no discharge of a bloody character from any of the natural openings of the body. The blood is coagulated

and of normal color. The spleen is normal. Congestion of the intestinal mucous membrane is at times present, and there may be some hæmorrhages.

The skin covering the lesions is dry. The muscles are dark in color, and decomposition takes place very rapidly.

The precautions taken in the handling of the carcass should be similar to those used in cases of anthrax, although the danger to human beings is nil. The danger of spreading the infection is, however, just as great.

With this disease, as with anthrax, there should be no difficulty in making a positive diagnosis in the field, but if it is desired to confirm the diagnosis, a few drops of bloody serum from the affected muscles, prepared in the same manner as blood from a case of anthrax, will yield positive results on microscopic examination.

Bacteriologically the difference between the germs of anthrax and blackleg is as great as the difference in their lesions. The anthrax germ is an aerobic (i. e., grows only in the presence of oxygen), non-motile organism, a characteristic being the chain formation in artificial media or in the tissues of the body. The germ causing blackleg is an aerobic (i. e., grows only in the absence of oxygen), and is actively motile. Chain formation is not a characteristic.

Both germs form spores, which spores are capable of retaining their infective properties for an indefinite length of time. Either germ is easily propagated, provided suitable media and conditions are observed. Anthrax is easily stained, retaining the dye when treated by the Gram method. Blackleg bacilli are also easily stained, but do not, as a rule, retain the dye when treated by the method of Gram.

An opportunity for the treatment of animals affected with either disease is seldom obtained, and when such an opportunity is presented it is usually fruitless.

The preventive inoculation against both affections is widely practiced, particularly in localities where it is known that the infectious agent exists. The attenuated virus for the preventive inoculation is prepared in laboratories especially equipped for this work, of which there are many on this continent, some connected with the federal or state governments, others connected with firms who make a specialty of biological products. These vac-

cines, when prepared with care and properly tested, may be considered reliable.

Anthrax vaccine, as prepared, requires two inoculations, the first preventing against infection by the second and the second preventing against infection by a virulent germ. The interval between the two inoculations varies, but is usually from ten to twelve days.

Blackleg vaccine is sold in two forms, the single vaccine and the double vaccine. The single vaccine is usually recommended for grade stock, while the double is recommended for pure-bred animals, it being considered that a single vaccine which will act as a preventive against the active infective agent is too strong for pure-bred animals, which are considered more susceptible, owing to their high breeding.

The method of applying blackleg vaccine is various, and is usually characteristic of the manufacturer, each firm desiring to obtain a method which is very efficacious and simple, that it may be placed in the hands of the layman as well as the veterinarian.

The results of vaccination against either infective agent are considered successful. Before using any vaccine as a preventive against anthrax the diagnosis should be confirmed by bacteriological examination. Rigid isolation should be enforced, and the animals moved daily to fresh uninfected land, that they may not have access to the infective agent. This progressive movement on fresh land will in many instances prove more efficacious than indiscriminate vaccination. In cases where the land is known to be infected, and it is impossible to remove the animals to uninfected land, vaccination is the only remedy against either affection.

DOMINION OF CANADA—DEPARTMENT OF AGRICULTURE.

Health of Animals Branch.

INSTRUCTIONS FOR SENDING SPECIMENS FOR MICRO- SCOPIC EXAMINATION.

In forwarding specimens of diseased tissues or organs for diagnostic purposes the following suggestions should be noted and carefully carried out, in order to ensure their arrival at the laboratory in good condition.

SPECIMENS FOR PATHOLOGICAL EXAMINATION.

Unless a specimen is so remarkable and characteristic that it should be preserved as an exhibition or museum specimen, it is unnecessary to send large portions. Small portions about an inch cube, well selected from different regions, are sufficient. They should be taken in such a manner as to exhibit the normal tissue passing into the diseased tissue. Together with the material which shows actual lesions, portions of an inch cube should be taken from the lung, heart, liver, spleen and kidney. In many instances the microscopical lesions in apparently healthy organs give the clue to the affection from which the animal suffered. These small portions should be placed in a wide mouthed bottle or jar, with at least five times their volume in alcohol, or, better still, a four per cent solution of formaldehyde.

Specimens from different animals should be placed in separate containers.

Large specimens may be packed in ice or frozen.

Hog Cholera and Swine Plague.

Where either disease is suspected, in addition to the material above designated, a portion of the intestine is necessary, consisting of the last portion of the small intestine and the first portion of the large intestine, including the ileo-cæcal valve.

SPECIMENS FOR BACTERIOLOGICAL EXAMINATION.

Bacteriological specimens are easily contaminated by the many putrefactive organisms which exist in the air and soil and, with few exceptions, must be taken by some one thoroughly trained in bacteriological methods.

Anthrax.—A few drops of blood from an animal suspected of having died of this disease, placed on a clean piece of note paper, allowed to dry in the air, folded, placed in an envelope and forwarded to the laboratory, provide sufficient material for diagnostic purposes.

Pus.—If it is desired to determine the presence or absence of the "actinomyces fungus" or "tubercle bacilli" in pus, a drop should be placed on a clean glass slide and pressed with another glass slide to make the preparation thin enough for microscopical examination. The slides should be separated immediately and allowed to dry in the air. In the absence of regular laboratory glass slides small pieces of clean window glass will answer.

Specimens for examination should be accompanied by a letter giving complete information concerning the case in question, with its history, clinical symptoms, etc.

Specimens must be labelled in order that they may be identified. The name and address of the owner of the animal and the name and address of the sender of the material are necessary in order that records may be kept and reports promptly forwarded to the proper parties.

Specimens not exceeding five pounds in weight after being securely packed, to prevent breakage of the containers, or leakage, should be sent by mail.

Specimens exceeding five pounds in weight should be sent by express.

J. G. RUTHERFORD,
Chief Veterinary Inspector.

Specimens should be addressed:

BIOLOGICAL LABORATORY,
Ottawa, Canada.

DISCUSSION.

PRESIDENT STEWART: Gentlemen, you have heard this important paper. It is open for discussion. I would say that it is customary to extend the courtesy of the floor to all present, though they may not be members. I trust that all who are interested will contribute to this discussion.

DR. WHEELER: I had occasion when living in the State of Louisiana to see a great deal of charbon. The custom in that state, among the sugar planters owning 150 mules, is to inoculate their stock every spring, as immunization is not supposed to last more than one year. I have probably made 1,000 inoculations, and I cannot recall a single unpleasant result from the inoculation. There are, however, in Louisiana, one or two other diseases that resemble charbon, and the new literature that is appearing on the subject of diseases in South Africa and the southern climates reminds me very much of some of the diseases I found in Louisiana. Some of the farmers opposed the inoculation for the reason that there are two or three other diseases confounded with charbon. Many of the farmers do not vaccinate until after the disease has started. The custom is, however, becoming more prevalent in the charbon district in Louisiana to inoculate regularly every year, and the results are becoming more satisfactory.

DR. KELLY: In New York we have had some experience with vaccination for anthrax, and I might say that in one or two instances where anthrax has been positively diagnosed by microscopic examination we have had several deaths after the use of vaccine, and it does not in all instances prevent the spread of the disease.

DR. MOORE: I would like to ask Dr. Higgins—perhaps he stated it—how long after the death of those animals he considers it advisable to make diagnoses on microscopic examination of dried blood.

DR. HIGGINS: In reply to this question, I believe that the sooner we get the material the better. After the animal has been dead for some time, I think the natural putrefactive processes destroy the greater part of the bacteria. While it may be possible to see some bacilli present, it may not be possible to make a positive diagnosis.

DR. MOORE: I feel there is great danger of making a mistake in the diagnosis by a microscopic examination unless the tissues are taken in a fresh condition. I believe that, in a good many instances, at least in our state, errors have been made. There is almost invariably a putrefactive organism in the tissues, especially of cattle that have been dead for several hours, that is a distinct anaerobic, and cannot be cultivated, but which exhibits morphologically the characters of the anthrax organism. I have been fooled with it myself, and in making a microscopic examination I have felt in two or three instances that morphologically I had the anthrax organism when further tests showed that it was the other.

Men who send material to laboratories for diagnosis should see to it that the tissue is taken from animals immediately after death, or blood drawn just before death, if the diagnosis is to be made by a microscopic examination.

Then there is one other point. We have had, as Dr. Kelly has stated, a number of outbreaks of anthrax, and other outbreaks of supposed anthrax, in New York, and in one of these it was my privilege to make examinations. There was not a lesion in the animal that suggested anthrax. I believe that if the animal had been killed in a butcher shop it would have been passed as being absolutely sound, but the organs were teeming with anthrax bacteria. The lesions certainly do not always appear as text books have in the past indicated. The enlarged spleen and hæmorrhages in the organs, while they are the usual manifestations of this infection, do not always appear. I feel, therefore, that the methods that are to be adopted in making a diagnosis must be accurate. I am glad that Dr. Higgins did point out that the diagnosis must be positively made before the application of any preventive vaccination.

DR. HIGGINS: I may state that I omitted one part of my regular routine in diagnosis. While I base a diagnosis upon the microscopic examination, I invariably follow such an examination with inoculations of the guinea pig. If anthrax does not develop in the inoculated animal, and further investigation indicates that we are not dealing with anthrax, I would issue a substitute report.

I have encountered something of the same trouble that Dr. Moore has, and that is the reason for this guinea pig inoculation. I think that we ought always to be positive of our diagnosis. This method, which has been adopted, is fairly good but it has its drawbacks, as Dr. Moore has pointed out.

DR. WHEELER: I would like to ask Dr. Moore what would be the procedure for the practitioner in preparing the culture to be sent to the laboratory. In the south, where the climate is very warm, decomposition is very rapid, and it is considerable risk, in trying to keep specimens for any length of time. It is my rule to make use of a stab culture, where I have time to provide myself with the means of doing so.

DR. MOORE: It seems to me that the distance of the animal from the laboratory has a great deal to do with the method. I believe that the methods Dr. Higgins has suggested can be relied upon when these examinations are made from tissues of living animals or animals just dead. I perhaps have emphasized the danger, but when tissues are taken from animals that are dead the putrefactive organism referred to is liable to be present. Further than this putrefaction tends to destroy the anthrax organism.

The method we use in New York, and which has a good many imperfections, is to have pieces of the organs taken when the post-mortem is made, put into some receptacle, like a tin pail or a can that has been properly sterilized, packed in ice, and sent by express. In other cases, these organs are taken, as suggested by Dr. Law some years ago, wrapped in a cloth, wrung out of some antiseptic solution, but left moist enough to disinfect the surface, packed in bran or saw dust, and expressed to the laboratory.

DR. HIGGINS: I would like to state my experience in this matter. It is one upon which I have done a great deal of thinking. Dr. Rutherford, our chief veterinary inspector, has issued a circular on this subject.

I find that the wrapping of tissues in cloths is very unsatisfactory. Many men, while they do the best they can under the circumstances, send in material which undergoes putrefactive changes in transit, rendering an examination with a view to a definite diagnosis impossible.

DR. NOACK: That the anthrax bacillus is not so easily destroyed by putrefaction is shown by the fact that anthrax bacilli are very often contained in skins sent from China to the United States. Then we have had often cases where people contracted anthrax in the tanneries from such skins.

DR. HIGGINS: Food products from the carcasses of animals that have died from anthrax should be considered dangerous, but two years ago I was in the West, assisting in looking after an outbreak of this disease on a sheep ranch, and a half breed took a carcass, dressed it and carried it away. We saw the halfbreed three weeks after, and asked him about it, and he said that he and his family were all well after eating that carcass.

A PRELIMINARY REPORT ON THE SHEEP DISEASE, ICTERO-HAEMATURIA, IN WESTERN MONTANA.

HERBERT PARLIN JOHNSON, PH. D., HELENA, MONT.

In October, 1902, I undertook for Dr. M. E. Knowles, state veterinarian of Montana, the investigation of a local and little known disease of sheep. The work was continued through the winter and spring, and is still under way. The fact that the disease has for more than ten years caused great losses over a considerable area, and is almost universally attributed by sheep owners and others to the poisoning effects of fumes from the copper smelters at Butte and Anaconda, rendered important a thorough scientific investigation of the malady.

The findings, in brief, are these:

1. A disease is endemic among the sheep of the Deer Lodge and Silver Bow valleys, known to pathologists as parasitic ictero-hæmaturia, and locally as the "yellow disease," "yellow hide," or "red water." It is without doubt identical with the "carceag" of Roumania, described by Babes in 1892, and three years later by Bonome in northern Italy.

2. As nearly as can be learned, the disease first appeared in a band of merinos in the winter of 1890, near Race Track, ten miles south of Deer Lodge. It soon spread to flocks in the vicinity, and during the next four or five years caused such severe losses as to drive several sheep raisers out of the business.

3. Beyond the valley the disease has spread more slowly. In 1892 or 1893 it first appeared among the sheep of T. Clowes Miles, Esq., near Silver Bow. During the past winter it has extended as far south as Feely, on Divide Creek, sixteen miles south of Butte. In whatever locality it appears, it continues during subsequent years.

4. The first cases develop in late fall or early winter. Fresh cases appear at intervals throughout the winter and spring, being especially numerous among ewes before and after lamb-

ing. No cases appear after July 1st and very few or none in June.

5. The disease is rapid in its course, and probably always fatal.

6. It is most prevalent among sheep that feed on the bottom lands. Flocks within the infected area, kept on high ground, generously supplied with good feed and pure water, sometimes escape entirely.

7. Although cases develop after the sheep are taken to the hills in the spring, it is probable that they have contracted the disease in the low grounds, and it has remained latent for a period.

8. Three- and four-year-old ewes are the most susceptible, then wethers of the same age. Lambs and bucks are immune.

9. Sheep brought into the infected area usually remain immune throughout the first year, but during the second winter the disease appears among them.

10. Sheep taken from the infected area to other parts of the state soon cease to die of the disease, and do not transmit it to other sheep.

11. A minute parasite (*Piroplasma ovis*) has been found in the blood corpuscles in every case. A very similar parasite (*Piroplasma bigeminum*) occurs in the corpuscles of Southern cattle, and is known to cause Texas fever.

12. The causation of ictero-hæmaturia by the blood parasite has not been experimentally demonstrated, either here or abroad. Experimental inoculations of the blood of diseased sheep into the veins or under the skin of healthy sheep have uniformly failed to reproduce the disease. Ticks from sheep dying or recently dead of the disease, placed on healthy ewes and wethers, likewise proved innocuous.

13. The disease is characterized by a general icterus or jaundice, the whole body becoming more or less yellow. There may or may not be edematous areas under the skin. The internal organs most affected are the liver, spleen and kidneys. In extreme cases, especially pregnant ewes, there is marked hæmorrhagic edema of the peritoneum, bladder, etc., and great enlargement of all the lymph nodules. The blood is greatly impoverished and anæmic, the red corpuscles falling as low as one or two millions per cubic millimeter. The urine is coffee

colored, owing to the presence of blood. The kidneys are dark, almost black, and intensely congested. Owing to the clogging of the bile capillaries, the liver presents a yellow hue, and is extremely friable, at length becoming necrotic. The gall bladder is often greatly distended, and the bile is sometimes very thick with mucus in advanced cases. The spleen is always enlarged and the pulp is very dark brown, almost black. Not infrequently there are ecchymoses in the heart muscle, especially of the left ventricle.

Historical.

This disease was first described by Babes of Bukharest, Roumania, in 1892. It is endemic in the low islands and delta of the Danube, appearing every year among the immense flocks driven there from the hills, and is most prevalent in May and June. It is known to the Roumanians as "carceag." In 1893 and 1894 Bonome studied eight cases in northern Italy, and although he described the disease as distinct from "carceag" there is no doubt that it is the same. The name given by Bonome, "parasitic ictero-haematuria," is admirably descriptive, and has been retained. Both Babes and Bonome found a minute parasite in the blood corpuscles, which they regarded as the cause of the disease. The position of these parasites in the organic scale was not correctly determined by either Babes or Bonome. The former regarded it as intermediate between the bacteria and the protozoa, thus making it a group by itself (*haematococcus*), in which he placed also the very similar parasite of Texas fever, or haemoglobinuria, of cattle in Europe and America. Bonome, in view of the active amoeboid movements of the organism, was inclined to group it with the amoebae, and the endogenous, spore-like mode of reproduction led him to establish the special group amoebosporidia. Bonome did not regard the parasite he had studied as identical with that found by Babes, which he speaks of as "a parasite of vegetable origin, capable like all bacteria of growing on artificial media." While Babes claims to have obtained a growth of the parasite of haemoglobinuria on blood serum containing haemoglobin, no one else has succeeded in doing so, either with this parasite or any other of its class.

Starcovici, a disciple of Babes, while contributing little that is new to the subject, has drawn an interesting and valuable comparison between hæmoglobinuria, Texas fever and carceag. He regards them as three distinct, though closely related, diseases—a view not shared by pathologists of to-day as regards hæmoglobinuria and Texas fever. He follows Babes in regard to the systematic position of the parasites as intermediate between the bacteria and the protozoa, but arranges them under two genera,—*Pirosoma*, including only the parasite of Texas fever, named *Pirosoma bigeminum* by Theobald Smith, and the new genus *Babesia*, including two species, *B. ovis*, the parasite of carceag, and *B. bovis*, the parasite of hæmoglobinuria. Starcovici does not define his new genus, and there are no sufficient grounds for its establishment. The three species, together with one producing a similar disease in the dog, are now grouped under the single genus *Piroplasma*, which is classed with the sporozoa, and is regarded as closely allied to the malaria germs.

In 1895 appeared the first scientific account of the ictero-hæmaturia in Montana, by Dr. W. L. Williams, then experiment station veterinarian at Bozeman. Before that the disease had been recognized as early as 1892 by the state veterinarian, but erroneously diagnosed as anthrax. According to the statement of Mr. T. Clowes Miles of Silver Bow, the “yellow disease” first appeared in the Deer Lodge valley in 1890, in a band of Merino ewes owned by Mr. N. Bielenberg. The epizootic was so severe that by spring over two-thirds of the band had perished. It is possible that these Merinos were imported, and brought the disease with them; but this I have not been able to verify. In view of the fact that sheep had been in the valley since 1875 the tardy appearance of the disease, if indeed it is endemic, is remarkable.

According to Williams, the disease attained great virulence the following year, when it ravaged four or five large bands. At that time there were more sheep in the valley than at present, and the losses were correspondingly greater. The loss from the “yellow disease” alone, according to Williams, was 1,600 per annum. In fact, it proved so destructive that several large sheep owners were driven out of the business.

Williams was the first to identify correctly the Montana disease as identical with the “carceag” of Roumania and the

ictero-haematuria of northern Italy. There are slight differences, it is true, in the clinical features, but there are so many points of resemblance there can be no reasonable doubt regarding the identity of the Montana and the European disease. Williams gives a full account of the symptoms and clinical picture, and determined the presence of the parasite in the red corpuscles.

Distribution of the "Yellow Disease."

In view of the fact that sheep are constantly being driven out of the valley to other parts of the state, it is remarkable that the disease has not spread more rapidly and widely. The extreme limits of the disease during the past winter have been Feely, sixteen miles south of Butte, and a point about three miles west of Deer Lodge. These points are about fifty miles apart. Williams, in 1895, estimated the infected area at 300 square miles, and it is certainly not much greater to-day.

All sheep owners with whom I have conversed agree that the disease does not occur until the sheep are brought in from the summer range in the hills, in late fall or early winter. It then usually appears with great promptitude, but is very irregular in its incidence. A few sheep, or perhaps only one or two, are attacked, then there will be no further cases for weeks or even months. It is reputed to increase with the advent of warm weather, but this I was not able to verify. It is especially prevalent among ewes after lambing, doubtless because the system is then greatly weakened. No cases develop after the first of July, and during the past spring I saw none after the first week in June.

The occurrence of the disease among the sheep of the valley is remarkably irregular. While some owners met with considerable losses, others of the same vicinity, perhaps only a mile or two away, would lose very few, or even none, from this disease. There was a notable difference, however, in the way in which the flocks were kept. Those allowed to range over the bottom lands, to drink from the river polluted with smelter tailings, and fed with native hay, also harvested from the bottoms, suffered the greatest losses; while sheep kept on higher ground away from the river, and fed alfalfa and sup-

plied with pure water often escaped entirely. It is commonly believed by the sheep raisers that sheep brought into the valley are immune during the first winter, but during subsequent years are peculiarly susceptible. This belief is apparently well founded, but obviously a single year's observation has not been sufficient to verify it.

Report of Cases.

During the winter and spring about thirty cases came to my personal knowledge, but the number that actually occurred must have been much greater. It proved impossible to hear of every case, on account of the very considerable area over which the disease has spread, and above all on account of the marked reluctance on the part of some of the largest sheep owners to assist the investigation in any way whatsoever. Twenty-two autopsies of sheep affected with this disease were made, and portions of the organs most affected were preserved for microscopic study. A great number of blood smears were taken from all fresh cases, and numerous blood counts were made. The urine of a few cases was analyzed. In a few instances the entire liver, spleen and kidney were preserved in their natural color and condition, in Kaiserling's fluid.

The first case occurred within three miles of Warm Springs, Nov. 25, 1902. Although no autopsy of this case was made, and the characteristic jaundice was not apparent externally, blood smears showed numerous parasites in the red corpuscles. It was subsequently learned that the general icterus is not an absolutely constant feature. It varies from a slight buffy tint to deep saffron, and in one case, seen in January, regarding which there was not the slightest doubt, it was not perceptible, any more than in the November case.

The next cases seen developed in the flock of Mr. T. C. Miles, in the Silver Bow valley, about December 15th. The disease appeared immediately after driving in the sheep from the range. There were only two cases, both typical and well marked, and it is remarkable that these were the only cases in this band of 800 during the entire winter and spring.

The next report of the disease came from W. J. Farmer, two miles south of Feely. In the middle of January four cases

occurred in his band of 1,800. Three were dead when I arrived, on the 12th, and another case, a four-year-old ewe, was discovered the following morning, and died soon after. The temperature less than an hour before death was 102.6°, and the respirations, which were very labored, were twenty-seven per minute. As often happens in this disease, the animal died in convulsions. A thorough autopsy was made, and the usual clinical picture was presented. Unlike the two cases examined at Miles's and the three other cases at Farmer's, there were no hæmorrhagic edematous areas under the skin. This is not a constant feature. The small quantity of urine in the bladder was dark coffee color, and microscopical examination revealed numerous red corpuscles. These, however, would not account entirely for the very dark color of the urine, which is unquestionably due largely to the presence of bile pigments excreted by the kidneys. The spleen was not greatly enlarged, but the pulp was very dark. The kidneys were greatly congested, being bluish black before removing the capsule, which peeled off very readily. Within the cortex and medulla were the same color, almost black, and practically indistinguishable to the naked eye. The liver was not necrotic and the bile stasis not marked. The gall bladder was not greatly distended. The heart was free from ecchymoses, the lungs normal. The large intestine and rectum were opened, but no lesions in the folds such as Babes describes were found. In fact, the absence of these seems constant in Montana cases. The blood was pale and watery, and there was marked leucocytosis. Parasites were found in a small percentage of the corpuscles. As not infrequently happens, these were not detected in the fresh blood, but only in stained preparations.

The next case observed was a two-year-old ewe, belonging to Hempstead & Boyle, near Race Track, in the Deer Lodge valley. This was seen February 2d. I was informed by the owners that this ewe had been sick for seven days, during which time it had eaten little or nothing. The animal was extremely emaciated, and so weak it could hardly stand. Neither the skin nor the white of the eye were perceptibly yellow, and after killing the animal the usual icteric condition of the carcass and internal organs (except the liver) was imperceptible. There was no doubt, however, concerning the identity of the

disease, as shown by the condition of the liver, spleen and kidneys. Hempstead & Boyle reported having lost during the month of January seventy or eighty head of sheep from their two bands of 2,100 each. From their statements and from a knowledge of what occurred in other bands it is safe to say that more than half died of ictero-hæmaturia.

The second week in February came the report of further losses near Race Track, in the band of Mr. Hugh Magone. Only one or two cases of the yellow disease were known to develop in this band of 1,000 ewes and bucks, which, though allowed to graze on the river bottoms, were given excellent care and had pure water to drink. Arriving at Race Track February 10th, I soon determined to make this my field headquarters, as the place is within easy reach of nearly all the sheep now kept in the valley.

The greatest number of cases developed in the two bands of Hempstead & Boyle and in a band of 2,300 ewes and wethers owned by W. M. Montgomery & Co. of Anaconda, and kept on the ranch of a Mr. Beckstead, three miles south of Race Track, and about five miles from Hempstead & Boyle's. The losses in this band were so large that the owners moved them to Dillon about the middle of March. Up to that time five cases of ictero-hæmaturia had, to my knowledge, appeared in this band, and in all probability the actual number was at least twice as great. During the winter and spring I personally examined thirteen cases in the two bands of Hempstead & Boyle.

There is no question that ictero-hæmaturia causes the greatest number of losses of any sheep disease in the Deer Lodge and Silver Bow valleys. Two other diseases, croupous pneumonia and the "big head," caused greater losses in May and June, but they prevail for a much shorter period. The former, in fact, was troublesome for only a few days during a cold, wet snow storm in May, in the midst of lambing.

The last cases of the season were three seen on June 5th, in the ewe band of Mr. Eli Desordé. This band had been snow-bound in Cottonwood Basin, at about 5,500 feet altitude, during the severe storm of the latter part of May, during and after which the losses had been quite heavy. Throughout the entire winter and early spring not a single case, so far

as known, occurred in Desordé's band. During and after lambing the losses were heavy in all the bands, and particularly so in those of Hempstead & Boyle. Fully half were from ictero-haematuria.

Symptoms and Gross Pathology.

Probably no case was seen in its earlier stages. A sheep in a large band is practically lost, and nothing is recognized to be the matter with it until the disease is far advanced. Among the first visible indications of ictero-haematuria are loss of appetite, indifference, and a tendency to keep apart from the flock. When the band is being driven these sheep are invariably in the rear. They either stand dumpishly when left to themselves, or wander aimlessly about. The head is drooped, and there is a marked sagging of the loins. If pursued they run in an uncertain, wavering manner, and turn aside for neither water nor fences. The animal urinates frequently, apparently with some difficulty, and the urine is very dark with blood and bile pigments. The feces are in large, solid masses, sometimes covered with mucus; rarely there is diarrhoea. The animal is weak and trembling, and the extremities become cold some time before death. The temperature is usually subnormal, especially in the advanced cases. Once, in case of a pregnant ewe, a temperature of 98.5° was recorded, and temperatures between 102° and 101° are very common. In only one instance was a high temperature (104.6°) obtained. This was surprising, inasmuch as ictero-haematuria has been considered a fever disease, like Texas fever, in which the rise of temperature is very notable. Williams does not record any temperatures, but says "a moderate fever is present." Bonome's records, however, agree with mine. He states that the highest temperature obtained by him was 39° C. (102.4° F.). Starcovici states there is high fever, with temperature of 40° to 42° C. It was obviously important to ascertain accurately what may be considered the normal temperature of healthy sheep in the same locality and at the same time of year. A temperature-record of eight sheep was kept from March 3d to March 28th, being taken either once or twice a day. Some of these sheep had been inoculated with blood from cases of ictero-haematuria, and a

rise of temperature was anticipated; but in no instance did it occur in a decisive manner, indicating the inception of the disease, and no case of ictero-hæmaturia developed among the experimental sheep. What may be regarded as the normal temperature of sheep is highly variable, and in the same animal, in apparent good health, may vary in twenty-four hours from 102.8° to 104.2° , as shown by the record of No. 29 (a wether), on March 13th and 14th. Probably a fair average for sheep in winter and spring is 103° . It is thus seen that the temperature of 104.6° , recorded for an icteric sheep, is not much, if any, beyond the range of normal temperatures. In no other case was it so high as this.

Only adult ewes and wethers are susceptible; lambs and bucks seem to be wholly immune. The majority of cases that came under my observation were two-year-olds and over, and more ewes than wethers. The ewe seems most susceptible during and after pregnancy, when the system is weakened. The animals attacked are almost always fat and evidently in excellent market condition, and they generally die too soon to lose much flesh. It is almost always useless to look for a case of the yellow disease in a lean and miserable-looking "hospital band."

The gross lesions implicate principally the organs concerned in the elaboration and the purification of the blood. The liver, spleen and kidneys are the most affected, but in extreme cases all the lymph nodules are enlarged, and there are hepatised areas in the lungs. It is quite possible, however, that the latter are of independent origin, and have nothing to do with the disease. Extravasations of blood in the myocardium, especially of the left ventricle, are very frequent, but are not a constant feature. The same may be said of the hæmorrhagic edemas of the neck and brisket. In the three cases of pregnant ewes examined there were extensive ecchymoses and edematous areas within the body cavity, implicating chiefly the connective tissue of the peritoneum, the mesentery, the omentum, and especially the bladder, the walls of which were a quarter of an inch thick.

Analyses of the urine frequently showed a very high percentage of albumen, too much, in fact, to measure by the scale on Esbach's tube. In other cases it was from six to

nine per cent. In one case (Sheep 35), where the urine was not red or dark, and appeared almost normal, the amount of albumen was only 1.5 per cent. On the other hand, the amount of urea was very small (.65 per cent).

The condition of the blood is very diagnostic. If it appears rich and bright red to the naked eye, it is a sure indication that the disease is in an early stage. Even so, the kidneys and spleen may exhibit the characteristic congestion and dark color. All advanced cases have the blood very thin, watery and dark colored. While the normal number of red corpuscles at the altitude of Race Track (4,700 feet) is from 13,000,000 to 14,000,000, icteric blood-counts range from 1,000,000 to 3,000,000 per cubic millimeter. In only one instance was the count as high as 9,000,000. The number of white corpuscles is markedly increased, and counts vary in different instances from 7,000 to 28,000 per cubic millimeter.

The Parasite, *Piroplasma Ovis*.

In a considerable proportion of the red corpuscles in the fresh blood a minute, highly refractive body may be seen under high magnification. This is the germ, or parasite, which is presumably the prime cause of the disease ictero-haematuria. The germ is normally located in a red corpuscle, but may occasionally be seen floating free in the blood-plasma. With the stains used for bringing out distinctly the various blood elements (such as Wright's malaria stain, and carbol-polychrome methylene blue), these organisms appear as dark, almost black, round bodies, in strong contrast to the red or light blue stained corpuscles in which they lie. While the usual diameter of the sheep's red corpuscles is five micromillimeters, that of the parasite is only one to two micromillimeters. Their abundance varies, not only in different cases, but also in the blood of different organs of the same case. They are more abundant in the spleen and liver than in any other parts of the body. Reproductive phases of the parasite are extremely rare and have been seldom seen. In some portion of the body, however, their reproductive activity must be very great, considering their vast number and the profound effect they have on the organism. There is every reason to

believe that this effect is not purely mechanical, although it is possible that they prey upon the red corpuscles to such an extent as to reduce their numbers very considerably. Without doubt they also secrete a toxin as virulent as that of any of the bacteria, and this is the real basis of their deadly effect upon their host.

The pathway of invasion of this parasite is still unknown. Judging from analogy, it is some biting insect, tick, or other ectoparasite of the sheep, and suspicion attaches to the sheep tick, *Melophagus ovinus*; but all experiments to inoculate healthy sheep by placing upon them ticks from those affected with ictero-hæmaturia have failed.

It is interesting to find that another local disease in Montana, the "spotted fever" so-called, of the Bitter Root valley, is caused by a blood-parasite so similar that it cannot with certainty be distinguished from that of ictero-hæmaturia, with the most powerful lenses. Its effects upon the organism, however, are quite different.

Experiments.

The practical impossibility of getting spontaneous cases in the early stages in order to watch them through their course rendered it highly important to be able to produce the disease at will by inoculating healthy sheep with the infected blood of icteric sheep. Successful inoculations would moreover dispose once and for all of any doubts concerning the causation of the disease by the parasite. Such experiments hitherto have always failed, for some reason not understood. The failure in case of ictero-hæmaturia is the more remarkable, because the kindred diseases, Texas cattle fever and the piroplasmose of dogs, are easily transmissible in this way. Bonome has expressed the opinion that not alone the parasite but some derangement, probably of the digestive system, is necessary to produce the disease. In other words, a perfectly healthy animal will not contract ictero-hæmaturia, even though the virulent germs be injected directly into the circulation. From my own experiments I am convinced that this view is correct. Eight sheep (three ewes, four wethers, and one imperfectly developed buck) received injections of blood

from advanced cases of ictero-haematuria. The blood was generally injected directly into the jugular, but also subcutaneously, and in quantities varying from one to twelve cubic centimeters. In one instance ground-up spleen pulp was used for a subcutaneous injection. The blood was taken perfectly fresh from the jugular of an icteric sheep, in the last stages of the disease. It was sometimes defibrinated, sometimes not. The sheep were kept by themselves, well watched and cared for, and a careful record of temperatures was kept, as it was anticipated there would be fever as a first indication of the onset of the disease. As previously stated, the results were entirely negative. Although there is no conclusive evidence that any multiplication of the parasites occurred after injection, they certainly remained in the circulating blood of the animal for weeks after the operation, as shown in blood-smears taken from the ear.

Conclusions.

The results of the investigation indicate that ictero-haematuria prevails only where conditions are favorable. Just what these favorable conditions are is not clearly understood because of our ignorance of the intermediate host that transmits the disease from sheep to sheep. That the disease is not contagious in the proper sense of the term is sufficiently clear. It is not a question of direct transmission from sheep to sheep, but evidently the germ must pass through at least one, and possibly two, intermediate hosts. Reasoning from the analogy of closely related germs which produce the malarial fevers of man and birds, Texas cattle fever, etc., this germ undergoes in the intermediate host certain developmental stages absolutely essential to its further propagation. It is obvious that no means of prevention other than purely empirical ones can be adopted until this intermediate host or hosts are known. At present the best course for the sheep raiser to pursue is to give his flocks the best of care. Experience shows that nourishing and bountiful feed, pure water, and clean, dry, pasture are the best prophylactic measures that can be adopted.

MALIGNANT TUMORS.*

D. KING SMITH, TORONTO, ONT., CAN.

When I selected the subject of malignant tumors to say a few words on before this society, I did so with the object of bringing forward a great class of tumors most interesting to members of the veterinary profession.

The new growths classified as malignant have some special characteristics distinguishing them from simple or benign tumors. They tend to destroy life, recur on removal and often have a tendency to metastasis. It is rather interesting, and at the same time remarkable, that these growths have their prototype either in the tissues of the adult or in the embryonic cells. Why an aggregation of cells similar to the cells of the body should take on a malignant character still is surrounded in mystery.

There have been several theories advanced as to the cause of such growths, but as yet none of them has proved entirely satisfactory. First of all I will mention the Embryonic Theory, which takes for granted that certain cells lying dormant, for some cause or other, become stimulated, grow and continue to grow without any apparent limit. The Inflammatory Theory looks upon the cause as some chronic inflammation. The Microbic Theory is the one to which much attention has been directed of late.

Now and then we notice that the germ of cancer has been discovered, but up to the present this theory has not stood the tests necessary to prove that the special cause has been isolated.

The chief reason for bringing this subject before you is to see if we, as members of the profession, cannot try and aid in the solution of the cause and study of these growths. It seems to me the solution of the cause must come from a systematic study of all tumors. As the lower animals are afflicted with malignant growths, no doubt many instances will come under the notice of the members of this society; therefore study each case carefully, note the situation of the tumor and send a piece of it

*Verbal address.

to some laboratory so that a microscopical examination can be made.

If every member will try and give aid in this direction, I feel confident that a great amount of knowledge on this subject will be gained. Perhaps at some future date the association will form a committee to keep the records reported by each member, and by so doing will help to accomplish a great benefit to mankind.

DISCUSSION.

DR. BAKER: This is an intensely interesting subject to me, and I am glad Dr. Smith brought it up. There is a line of investigation or experimentation possible in connection with tumors to establish, *first*, their malignancy; *second*, their relationship; *third*, transmissibility; *fourth*, the actual production of malignant tumor by accidental or intentional inoculation. In Chicago experiments are being carried on by Professor Evans, with a view to determining whether the different kinds of cancer can be produced by inoculation, i. e., by transplanting cells, that are recognized as malignant, into healthy tissue. I think if many of us would communicate our ideas on this subject from time to time to the veterinary journals for publication, with a view to getting them on record, it would be very valuable to the profession.

THE CLINIC.

The clinic was held in Dey's Rink, a place admirably adapted for the purpose, having an arena of about 75x100 feet, with the seats at one end, arranged in amphitheatre fashion, so that the auditors were gathered in such close proximity that a discussion of the cases on exhibition could take place, the speaker's voice being easily audible to all present. The length of the building was sufficient to permit a patient to be trotted to the halter, in order that the characteristics of his gait could be readily observed by every one; so that in the case of lameness the best facilities were afforded for diagnosis.

In many respects the clinic in connection with the Ottawa meeting was the most satisfactory one yet held by this association. While it is certain that the performance of surgical operations by the foremost surgeons of the country is the highest ideal of a surgical clinic, it has been repeatedly demonstrated that it is almost, if not altogether, impossible to carry out such a program in a manner consistent with our conception of modern surgical technic and in an otherwise satisfactory manner. While those who are assisting the chief operator have no difficulty in observing his methods and witnessing his manipulations, the great audience upon the benches behold merely a number of heads in juxtaposition, and are utterly unable to appreciate what has probably cost the clinic committee much time, trouble and expense to prepare for their benefit. It therefore appears to the writer that medical cases, or surgical ones intended for observation and diagnosis, will, under most circumstances, prove of greater interest and value to the membership as a whole. If simple surgical cases, requiring little time for operation, the character of which are of easy demonstration, can be introduced, they might well be included. If the facilities for operation were ideal, more pretentious ones could also be introduced. The local committee having the affair in charge should give the character of the cases accepted very earnest consideration, with due regard to the

facilities at their command, bearing in mind the ability of the audience to see and understand what is taking place.

At Ottawa, as above stated, the facilities so far as building and room were concerned were all that could be desired. The seating capacity was excellent, and the master of ceremonies a diplomat; but the facilities for performing surgical operations were very crude. There was no operating table; no stocks; no way of confining a subject save by casting upon a mat, so small that the single case thrown fell several feet away from it and had to be dragged over to it. The Ottawa committee were alive to this laxity of arrangement, and attempted very little which was not well carried out. It is just possible that if the operation of trephining the fistulous tracts in the inferior maxilla of the brown horse had been omitted, the clinic would have robbed the writer of all opportunity for adverse criticisms.

The following cases were presented:

Brown gelding, lame off hind leg, said to be chronic hip lameness. Diagnosed by Dr. Bell as diffused bone spavin; confirmed by Dr. A. H. Baker.

Bay gelding, lame near forward leg. Diagnosed by Dr. Newton as navicular arthritis. Cocained by Dr. Bell; neurotized by Dr. Cotton; low operation.

Bay gelding, exostosis with five fistulous tracts leading to center, on inferior maxillary bone at bifurcation of jaws. Cast and operated by trephining by Dr. Beckett.

Gray gelding, lame near hind leg. Diagnosed by Dr. Brenton as ringbone; confirmed by Dr. M. C. Baker.

Gray gelding, crib-biter; presented for the nervo-muscular operation. Dr. Marshall, who was called upon to operate, declined, saying that the results had been so poor in his practice he had discarded the operation. In the discussion which ensued Dr. Marshall's conclusions appeared to be identical with those of all who had resorted to it.

Bay mare, lame in near hind leg for past four years. Diagnosed by Dr. Winchester as due both to ringbone and spavin.

Dr. Berns believed it due entirely to ringbone. Dr. Bell thought the ringbone of traumatic origin, in that there had been a fracture into the joint. Drs. A. H. Baker, Massey, McKillip and others had views for and against the various opinions. The mare was cocained in the digital nerve, which had but slight

effect in lessening the lameness; subsequently she was cocained over the peroneal nerve, which considerably improved her gait.

While these few cases serve to show the character of the clinic they do not explain the running discussion and the many practical points brought out. For instance, the subject of splints, their causation and treatment, was well discussed, and many other subjects received similar treatment.

Finally, Dr. Tennant of London, Ont., was asked to give his experience with the oxygen treatment for milk fever, which he did in a very interesting manner, giving the technic of his method, and provoking many inquiries concerning the details.

The writer would suggest that the association appoint a committee to write up each clinic, calling attention to such faults as they may have observed, and offering such suggestions as seem to them pertinent, thus making this branch of our annual meeting of greater value each year. The publication committee have not been instructed nor empowered to do this, but it appears to them that the report of the meeting would be incomplete without a reference to this important part of the programme.

R. R. B.

ENTERTAINMENT.

The fortieth annual meeting of this international organization convened in the council chamber of the city hall, Ottawa, Canada, Sept. 1, 1903, at 10 o'clock a. m., President Dr. S. Stewart of Kansas City, Mo., in the chair. The large hall was beautifully decorated with English and American flags, the folds intertwining in a manner to show the close ties of friendship and interest between the two English-speaking nations. Behind the chairman's platform, on either side, were portraits of President Roosevelt and King Edward, while between them, draped in mourning, was the picture of the late Prof. Eduardo Nocard of France, an honorary member of the American Veterinary Medical Association. The room was well filled when the President's gavel fell, there being present the mayor of the city, minister of agriculture of the Dominion, a large number of Ottawa aldermen, some members of Parliament, and other distinguished public men and private citizens, while the entire rows of rear seats, four or five deep, were occupied by ladies, both visitors and the families and friends of local veterinarians.

President Stewart, in well chosen language, announced that the opening of this meeting marked a new era in the history of the association, as it was the first time that it had ever assembled outside of the boundaries of the United States. He referred in complimentary terms to the Canadian members who have been associated with the organization for the past few years, and predicted a large yearly increase of members from that section, and a corresponding expansion of the interest and value of the work and influence of the association. He then introduced the Hon. Frederick Cook, mayor of Ottawa, who welcomed the association to the city in the most cordial terms, declaring that the municipality was wide open to receive the association. His address was not only an extremely friendly one, but contained much that showed familiarity with the veterinarian's field, his aims and abilities, and was closed with a patriotic peroration in behalf of a closer union between the two countries.

Dr. D. E. Salmon of Washington, D. C., was called upon on behalf of the association to respond to the mayor's welcome, and he did so in true Salmonian fashion, being at times gravely serious, at others provokingly amusing, but always forceful and interesting. He spoke of the habit which Americans had acquired of considering Canada such a northern land, and stated that, strange as it might seem, there were cities in Pennsylvania in the same latitude as some of the Canadian towns. This appeared to be such a hazardous statement that we observed several present make notes of the assertion with the evident intention of consulting a map when opportunity offered. The doctor made the Canadians feel that their hospitality was appreciated, but assured them that the main object of our coming was for work, and work which meant not alone the advancement of our science, but the protection of the public health and the betterment of the human race.

R. R. B.

Leaving the city hall after listening to the president's address,* the ladies of the party were taken in charge by the reception committee of the Ottawa city council, and were shown an exhibition run of the fire brigade in illustration of the speed and smartness necessary in dealing with conflagrations of the importance and extent for which Ottawa has, especially during recent years, become somewhat noted.

After lunch the ladies and their friends were driven, by the reception committee, to many of the points of interest about the Canadian capital. The houses of parliament, a splendid pile of buildings, whose architectural fame is world wide, and which stand amid beautiful grounds on a bold eminence overlooking the Ottawa river, were first visited, and here, grouped picturesquely around the base of a magnificent statue of the late Queen Victoria, the ladies and their escorts were photographed.

Then followed a pleasant drive along the fine avenue recently constructed by the improvement commission, which is rapidly making Ottawa a place of real beauty, through Lansdowne Park and the principal streets of the city. The International Bridge was then crossed, and after a detour through the city of Hull, an

*See page 27.

enterprising manufacturing center on the Quebec side, the Ottawa river was recrossed, the return journey furnishing a splendid view of the wonderful Chaudiere Falls, one of the great scenic lions of Eastern Canada. The remarkable development of water power at this point was noted by many of the visitors, and the remark was general that, great as it was, the future had still more enormous possibilities in store. Somewhat tired, but thoroughly interested and impressed, the party reached the city hall about six in the evening, just in time to prepare for dinner.

At eight o'clock the resident veterinarians tendered an informal reception to the visitors in the parlors of the Russell House, which were tastefully decorated with flowers. An excellent orchestra furnished music for the occasion and refreshments were served during the evening. This little gathering was greatly enjoyed by all present, helping, as it did, to lessen formality and make the members of the party better acquainted with each other.

The following day was one which will long be remembered by all who enjoyed the open handed hospitality of Senator Edwards, at his beautiful farm at Rockland, some twenty miles down the river from Ottawa. Boarding the steamer Empress at the somewhat early hour of 7:30, Rockland was reached shortly after nine o'clock. Immediately on arrival the ladies were driven to the farm in carriages, among which brakes, buses and almost every other variety of conveyance were noted, while, headed by the Scotch pipers, the male visitors walked through the fields to the farm, a special sidewalk having been laid down by the senator for their convenience. After inspecting the herds of fine cattle and other stock maintained on the farm, a tour was made through the magnificent buildings provided for their accommodation. The extent and convenience of these structures greatly impressed the visiting veterinarians, and constant expressions of surprise and pleasure were heard. The remaining time before luncheon, which was served at 12:30, was spent in many different ways by the throng of happy guests. The weather being perfect, many took the opportunity of viewing the surrounding country from the top of one or other of the fine four-in-hand brakes which were at their disposal. Others rested under the trees, while some, more enthusiastic, retraced their steps through the stables and among the various bands of fine stock in the paddocks. An

informal dance was inaugurated on the floor of one of the biggest barns, music being furnished by an orchestra from the band of the Governor General's Foot Guards and by Piper Saunders, late of Her Majesty's service. Mr. W. G. Grant, the veteran Highland dancer, also gave an interesting exhibition of his skill at the steps, while many others displayed their agility in the same direction. Not least among these was Senator Edwards himself, who danced a vigorous jig, making the timbers of the solid barn fairly quake with the tremendous force of his final breakdown.

At 12:30 the visitors were invited to lunch, which was laid in an immense hippodrome, forming the center of the Senator's fine horse stables. The viands were of the best, and tastefully served, many complimentary remarks being passed as to the excellent and efficient attendance furnished under the circumstances. The building was beautifully decorated with British and American flags, many of the smaller of which were secured as souvenirs by the members of the fair sex present. The lunch finished, the papers of the afternoon were read and discussed, after which a pleasant hour was spent in listening to speeches made by members of the Canadian senate and house of commons and other prominent gentlemen present. This love feast was brought to a climax by the whole audience rising to their feet and singing a verse each of "God Save The King" and "America." Before dispersing, Senator Edwards called for three cheers for His Majesty, which were heartily given, and a similar compliment was enthusiastically paid to the President of the United States. By this time the hour for departure had nearly arrived, but a pleasant interval still elapsed before the Empress hove in sight for her homeward trip. As she left the pier, three rousing cheers were given for Senator Edwards, whose generous and unbounded hospitality will never be forgotten by the members of the association. Music and dancing enlivened the journey homewards, while, for admirers of nature, the lovely reaches of the majestic Ottawa furnished an endless panorama of scenic beauties. The city was reached at 7:30, just as the shades of evening fell, and, though tired, all were unanimous in declaring the day to have been one of solid enjoyment.

On Thursday afternoon the wives of the local committee entertained the ladies of the party and as many of the gentlemen as could tear themselves away from the business meeting in the

city hall at a garden party on the fine lawns of the central experimental farm, just outside the city limits. A large number availed themselves of this opportunity to see the many things of interest on the farm, and the various officers and their families residing on the premises did everything in their power to make the occasion interesting and pleasant. Refreshments were served in large military marquees, and the full band of the Governor General's Foot Guards enlivened the proceedings by rendering many fine musical selections.

On the same evening the annual banquet of the association was held at the Victoria hotel, on the shores of Lake Deschenes in the province of Quebec, some ten miles from Ottawa. The trip was made in comfortable trolley cars, specially engaged, and which were held to suit the convenience of the guests at the close of the banquet. Over two hundred sat down to the repast, which was declared by those present to be equal to Delmonico's best efforts. Our old friends, the band of the Governor General's Foot Guards, occupied the piazza at the windows of the banquet-hall, and never wearied during the evening in delighting the ears of the assembly with their sweetest strains.

After justice had been done to the menu, Dr. Rutherford, who occupied the chair, proposed the health of "The King," which was received with the usual honors, as was also the next toast "The President of the United States," the band rendering the "Star Spangled Banner" in excellent style.

Dr. Horace Hoskins of Philadelphia responded on behalf of the president in an eloquent and dignified speech, dwelling on the lofty ideals and high national aspirations of the modern American statesman.

Hon. Sydney Fisher, the Minister of Agriculture, responded in a felicitous manner to the toast of "The Senate and House of Commons." The minister is a strong friend of the veterinary profession, and fully appreciates the importance of its services to the live stock interests of the world. His remarks were listened to with profound attention, and the audience was not backward in showing its approval of his very evident familiarity with the practical side of our professional life. The chairman, in proposing the time-honored toast of "The Army and Navy," suggested that on this occasion, auspicious of international comity, it should be changed to "The Armies and Navies," so as to embrace

the fighting forces of both branches of the English-speaking race. In responding, Colonel Thompson, M. P., who is one of the most brilliant orators in the Canadian House of Commons, did full justice to the chairman's suggestion, and evoked the enthusiasm of his auditors by his stirring word pictures of the possibilities for good which might be achieved through the welding and wielding together of the mighty strength of the two nations. The subject was an attractive one, and the colonel's speech was punctuated with applause.

The toast of "The Medical Profession" elicited able responses from Sir James Grant, the veteran physician of Ottawa, and Dr. Montizambert, Director General of Public Health for the Dominion. The former earned the applause of his audience by the statement that the successful practitioner of comparative medicine requires much more thorough training, especially in observation, than does his medical confrere, clinching the statement with a humorous reference to Balaam's ass, the only animal ever known to have spoken. Dr. Montizambert expressed freely his appreciation of the work done by veterinarians in assisting in the maintenance of public health, and pointed out many striking instances in which they had led the medical profession in the work of scientific research, especially regarding diseases communicable to man and animals alike.

Prof. Roscoe Bell, the president-elect, responded on behalf of "The Press." His remarks were not lengthy, but showed that he fully understood the power of the great weapon which he so ably wields on behalf of his chosen profession.

The last, but not the least, toast of the evening was that of "The Ladies," who found an able and eloquent champion in the venerable Dr. Winchester, who testified to the great, if somewhat distant, admiration for the fair sex which he had cherished through a long and arduous life.

The health of Dr. Rutherford was proposed and duly honored, but owing to the lateness of the hour the chairman excused himself from further remarks.

The national anthem, followed by "Auld Lang Syne," brought the festive gathering to a pleasant ending, and the company reached the city after a comfortable ride some time among "the wee sma' oors ayont the twal."

Friday morning was occupied by the clinic, but in the afternoon the reception committee of the city council took the mem-

bers and their lady friends in charge, and devoted several hours to showing them more of the beauties of Ottawa. On special trolley cars they were carried down past Rideau Hall, the residence of the governor general, through Rockcliffe Park, whose sylvan shades overhang the Ottawa, and on to the rifle ranges, where the Canadian Tommy Atkins was found in force, busily banging at targets of all kinds, from the old fashioned disk to the running man. A pressing invitation from the camp quartermaster to alight and share the hospitality of the red coats had to be declined, as time was pressing, and a numerous party of guests invited by the city was awaiting to welcome the visitors at the "Royal Shanty." This is a typical lumbering shanty, complete in every detail, erected some years ago on the occasion of a visit from the present Prince and Princess of Wales, to afford them an opportunity of seeing the "lumber jack" at home. It is situated deep in the piney woods, and close beside it stood a white marquee, where refreshments, solid and liquid, were pressed upon the visitors. Here the first Canadian meeting of the American Veterinary Medical Association was brought to a fitting close by a few pleasant and friendly speeches from members hailing from either side of the international line. Expressions of good feeling were freely exchanged, while the air for a time was thick with compliments. When the atmosphere had cleared the party wended its way back to the city, and farewells were the order of the day. The week on the whole was a most enjoyable one to all concerned, and will doubtless be productive of much good in promoting friendship and fellowship among the members of the American Veterinary Medical Association.

The committee in charge of the entertainments consisted of Drs. Rutherford, Higgins, Harris, White, James, Hollingsworth, Boucher and Moore, who were ably seconded by the members of the Ottawa city council and the officials of the department of agriculture.

J. G. R.

ATTENDANCE LIST.

Members:

Drs. Allen, Baker (M. C.), Baker (A. H.), Beckett, Belaire, Bell (Geo. W.), Bell (Roscoe R.), Berns, Boucher, Brenton, Brown, Burget, Burnett, Butler (Tait), Butler (J. S.), Cooley, Cotton (Chas. E.), Couture, Dodge, Duchene, Dougherty, Ellis, Etienne, Fish, Fisher, Fuller, Glennon, Corsuch, Hall, Harris, Hay, Heyde, Higgins, Hinman, Holden (W. C.), Hoskins, Howard (L. H.), Huff, Hughes, Jakeman, Jameson, Kelly (Wm. Henry), Kenning, Kerr, Knapp, Knowles, Law, Leech, Lefebre, Loveland, Lowe (Wm. Herbert), Lyman (R. P.), McAlpine, McDonald, McGillivray, McGuire, McMurtry, McQuaig, Massie, Marshall, Metcalf, Moore (A. E.), Moore (V. A.), Morrison, Nesbitt, Newton, Noack, Palmer, Perry, Pierce, Plaskett, Playdon, Pope, Porter, Quin, Quitman, Repp, Reynolds, Richardson, Roberts, Robertson (J. L.), Robinson (T. E.), Runge, Rutherford, Ryder, Salmon, Sawyer, Scurfield, Shepard, Simpson (C. R.), Smith (T. E.), Smith (D. King), Stewart (S.), Stubbs, Sweetapple, Tennent, Torrance, Thacker, Thayer, Waddle, Walrod, Ward, Wheeler, Winchester, Winslow, Wray, Zuber. Total, 103.

Visiting Veterinarians:

Canada—M. B. Perdue, Chatham, Ont.; G. W. Orchard, Windsor, Ont.; L. Mulligan, Manstick; J. D. Irvine, Van Kleek Hill, Ont.; D. A. Irvine, Maxville, Ont.; G. A. Kennedy, Ottawa, Ont.; J. H. Engel, Milverton, Ont.; G. W. Higginson, Rockland, Ont.; H. Bradshaw, Napanie, Ont.; A. D. Stewart, Ailsa, Ont.; C. W. J. Haworth, Eaganville, Ont.; Andrew Smith, Toronto, Ont.; Wm. Dann, Granton, Ont.; M. Gallwan, Iroquois, Ont.; S. J. Thompson, Winnipeg, Man.; John Wilson, Wingham, Ont.; J. Pickel, Drayton, Ont.; W. C. Young, Allmand; J. J. Tyle, Bratford; John H. Wilson, London, Ont.; D. J. McKillop, Forester's Falls, Ont.; H. E. Marshall, Ottawa; M. A. Whimster, Hannata, Manitoba; J. B. R. Telmosse, Maniwaki; D. H. Weaver, Mount Forest; P. T. Bowlby, Tweed; H. Young, Cobden; A. I. Telmosse, Hull; J. J. McGuiger, Ottawa; Wm. Lawson, Dundac, Ont.; M. G. Connolly, Burks Falls; R. H. McKenna, Pecton, Ont.; J. D. Whyte, Ottawa; John Tywell, Mackinac Falls, Ont.; S. Kennedy, Wakefield, Ont.; J. B. Hollingsworth, Ottawa; D. A. Bonesteel, Frankford; A. E. James, Ottawa; B. F. Butler, Marmora, Ont.

Connecticut—L. J. Turner, Winsted.

Illinois—James Smellie, Eureka.

Massachusetts—Jesse A. Viles, Lowell.

Michigan—H. S. Smith, Albion.

New Jersey—Chas. E. Magill, Haddonfield.
New York—C. Bahret, Poughkeepsie.
Ohio—G. Hess, Ashland; P. A. Dillahun, Springfield; J. W. Simpson, Cincinnati.
Pennsylvania—A. W. Wiert, Greenville.
Utah—Daniel LeMay, Fort Douglas. Total, 50.

Lady Visitors.

Canada—Mrs. W. Moore, Mrs. W. Lawson, Mrs. H. E. Marshall, Mrs. A. S. Morrison, Mrs. A. Anderson, Mrs. John Wilson, Mrs. W. I. Bevoley, Mrs. W. J. Hinman, Mrs. A. E. Moore, Mrs. A. S. Etienne, Mrs. A. Quin, Mrs. J. B. Hollingsworth, Mrs. J. G. Rutherford, Mrs. A. W. Harris, Mrs. A. E. James, Mrs. Chas. H. Higgins, Miss Dorothy Rutherford, Miss Barber, Miss Y. Bevoley, Miss C. E. Boucher, Miss Quinn, Miss Bertha A. Marshall, Miss Kathleen Gilmour.

District of Columbia—Mrs. J. D. Robinson.

Illinois—Mrs. A. H. Baker.

Iowa—Mrs. G. M. Walrod.

Massachusetts—Mrs. C. R. Simpson.

Michigan—Mrs. Geo. Waddle, Mrs. H. F. Palmer, Mrs. S. Brenton

Minnesota—Mrs. D. McDonald, Mrs. G. Ed. Leech, Miss Nellie Carroll.

Missouri—Mrs. S. Stewart.

New Jersey—Mrs. W. Runge, Mrs. T. E. Smith, Mrs. Wm. Herbert Lowe, Miss Ellen Glennon.

New York—Mrs. W. McLean, Mrs. G. A. Knapp, Mrs. Geo. H. Berns, Mrs. R. R. Bell, Mrs. J. E. Ryder, Mrs. J. Robinson, Miss M. Gertrude Huff, Miss Nellie C. Berns; Masters Hollingsworth and Belmont Bell.

Ohio—Mrs. Julia L. Choate, Mrs. Flora A. Cooley, Mrs. John V. Newton, Miss Lucy Cooley, Miss Ellen Cooley, Master Richard Cooley.

Pennsylvania—Mrs. A. W. Wier, Mrs. John J. Repp, Mrs. C. J. Marshall, Mrs. W. Horace Hoskins, Mrs. H. Brooks; Masters Harold C. Repp, Cyril Repp.

Utah—Mrs. Daniel LeMay.

Other Visitors:

Canada—W. I. Bevoley, M. D., J. E. McPherson, Alderman J. E. Ashworth, J. M. Lavaie, A. Angel, Col. Thompson, M. P., Geo. Duncan, Senator Owens, Alderman Slattery, McLeod Stewart, H. A. Huber, L. W. Whitney, Alderman M. Plouffe, John Galbraith, Mr. Cole, W. Cunningham, Geo. W. Rogers, John D. Reid, President Board of Trade, J. E. Dent, C. George. P. Prevost, Chief of Fire Department, Alderman I. C. Enright, J. Benning, Rev. W. Moore, Mr. Sparks, A. C. Mitchell, L. Blume, M. C. Nicoll, Lieutenant M. Loveken, C. P. Drevor, W. S. Proderick, M. D., G. H. Richardson, Capt. Elliott, J. L. Basken, M. D., Alderman John C. Grant, D. M. Robertson, M. D., Wm. Saunders, M. D., N. Boyd, M. P., W. C. Grant, Hon. Sidney Fisher, Minister of Ag-

riculture, Hon. G. F. O'Halloran, deputy Minister of Agriculture, F. Montizambert, M. D., Lirector General Public Health, Wm. F. Powell, Hon. Fred Cook, Mayor, Col. A. S. James, Alderman F. M. Journeaux, F. O. Hanley, L. McFarlane, M. A. Waller, Sir James Grant, M. D.; Alderman T. Payment, A. L. Mattice, J. P. Dunlop, G. McClymont, Alderman W. R. Stroud, Alderman Sam Rosenthal, John Henderson, A. G. Pattenday, Thos. Potter, M. D., and H. Manley, Ottawa; Chas. H. McVeigh, Vars; Senator Perley, Woolsley; P. J. Lynchke, Carp; J. Frederick, Senator W. C. Edwards, Harry Taylor, Reginald Wilson, Rockland; L. A. Brown, Aylmer; Geo. Howell, Vernon; Senator King, St. Johns; Arch McCormick, Ormstown; Chas. Little, Winnipeg; Jabel Robinson, M. P., West Elgin; Senator Leguis, Quebec; T. S. Sproul, Markdale; W. C. Young, Almont.

District of Columbia—E. V. Wilcox, Washington.

Illinois—J. H. Davis, Alex Eger, Zan Cotter, Chicago.

Massachusetts—John M. Farquahar, Lynn; Chas. F. Kent, Worcester.

Minnesota—Robt. S. Taylor, St. Paul.

New Jersey—J. O. George, Camden.

Norway—A. J. Jacobson, Frederickstad.

Pennsylvania—H. P. Brooks, Philadelphia.

Tennessee—Mark White, Jr., Nashville. Total, 86.

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W. H. DALRYMPLE.....Baton Rouge, La.

C. J. MARSHALL.....2004 Pine St., Philadelphia, Pa.

J. E. RYDER.....1634 Broadway, New York

SECRETARY.

JOHN J. REPP.....5249 Addison St., Philadelphia, Pa.

TREASURER.

WM. HERBERT LOWE.. Paterson & Van Houten Sts., Paterson, N. J.

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G. W. Dunphy,
A. H. Baker,

Ex-officio,

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M. E. Knowles,
J. G. Rutherford,
W. H. Dalrymple,
C. J. Marshall,
J. E. Ryder,
John J. Repp,
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A. S. Wheeler,
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N. S. Mayo,

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Benj. D. Pierce,Wm. Henry Kelly,
E. H. Shepard.

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J. G. Rutherford,James L. Robertson,
Joseph Plaskett.

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John J. Repp,
D. King Smith,L. A. Merillat,
E. L. Quitman,
H. D. Hanson.

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M. H. Reynolds,

Tait Butler.

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M. H. Reynolds, *Chairman*.

John J. Repp,

Richard P. Lyman.

MUTUAL AID ASSOCIATION.

William Dougherty, *Chairman*.W. Horace Hoskins,
A. H. Baker,E. B. Ackerman,
S. Brenton.

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Alabama—A. Gibson, 412 N. 20th St., Birmingham.
Arizona and New Mexico—J. C. Norton, Phoenix, Ariz.
Arkansas—R. R. Dinwiddie, Fayetteville.
British Columbia—Johnson Gibbins, 1003 Granville St., Vancouver.
California—Archibald R. Ward, Berkeley.
Colorado and Utah—George H. Glover, Fort Collins, Col.
Connecticut—Thomas Bland, Waterbury.
Delaware—H. P. Eves, 507 W. 9th St., Wilmington.
District of Columbia—John S. Buckley, Dept. Agriculture, Washington.
Florida—J. G. Hill, 324 Forsythe St., Jacksonville.
Hawaiian Islands—W. T. Monsarrat, Honolulu.
Illinois—E. L. Quitman, 489 Jackson Boulevard, Chicago.
Indiana—J. O. Greeson, Kokomo.
Iowa—Hal C. Simpson, Denison.
Kansas—N. S. Mayo, Manhattan.
Kentucky—D. A. Piatt, 19 W. Short St., Lexington.
Louisiana—Joseph L. Drexler, Thibodaux.
Maine—A. Joly, Waterville.
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Maryland—W. H. Martenet, 1005 W. North Ave., Baltimore.
Massachusetts—Benj. D. Pierce, 27 Sanford St., Springfield.
Michigan—G. W. Dunphy, Quincy.
Minnesota—J. G. Annand, 414 First Ave. S. E., Minneapolis.
Mississippi—E. M. Ranck, Natchez.
Missouri—Chester Miller, 5230 Ridge Ave., St. Louis.
Montana—M. E. Knowles, Helena.
Nebraska—G. R. Young, Omaha.
New Jersey—James T. Glennon, 146 Sumner Ave., Newark.
New York—Wm. Henry Kelly, 233 Western Ave., Albany.
Nevada and Idaho—J. Otis Jacobs, Reno, Nev.
North Carolina—A. S. Wheeler, Biltmore.
North Dakota—L. Van Es, Agricultural College.
North West Territory—Jno. F. Burnett, Macleod.
Nova Scotia—Wm. Jakeman, Halifax.
Ohio—H. Fulstow, Norwalk.
Ontario—John W. Groves, Hamilton.
Oregon—Wm. McLean, 328 Fourth St., Portland.
Pennsylvania—C. J. Marshall, 2004 Pine St., Philadelphia.
Quebec—A. A. Etienne, St. Hyacinthe.
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South Carolina and Georgia—G. E. Nesom, Clemson College, S. C.
South Dakota—E. L. Moore, Brookings.
Tennessee—George R. White, Nashville.
Texas—H. D. Paxson, North Fort Worth.
Vermont and New Hampshire—F. A. Rich, Burlington, Vt.
Virginia—John Spencer, Blacksburg.
Washington—James Bullivant, Spokane.
West Virginia—F. P. Ruhl, Fairmont.
Wisconsin—Charles Schmitt, Dodgeville.

ACTIVE MEMBERS.

Abele, Francis, Jr., Quincy, Mass.
Ackerman, E. B., 167 Clymer St., Brooklyn, N. Y.
Adair, H. B., 1007 Norton Ave., Kansas City, Mo.
Adams, John W., 1102 S. 46th St., Philadelphia, Pa.
Ainsworth, C. B., Greensburg, Ind.
Alarie, G., L'Epiphanie, Quebec.
Allen, F. S., 800 N. 17th St., Philadelphia, Pa.
Allen, Thos. A., Brockville, Ont.
Althouse E. P., Veterinary Hospital, Univ. of Pa., Philadelphia, Pa.
Ambler, H. B., Chatham, N. Y.
Anderson, F. E., Findlay, O.
Anderson, J. S., Seward, Neb.
Andress, W. R., 2604 Ridge Ave., Philadelphia, Pa.
Annand, J. G., 414 First Ave. S. E., Minneapolis, Minn.
Armour, W. J., Goshen, Ind.
Atherton, I. K., 4202 Berkeley Ave., Chicago, Ill.
Ayer, Don C., 1624 Howard St., Omaha, Neb.

Babb, Albert, 320 S. 8th St., Springfield, Ill.
Baker, A. H., 2537 State St., Chicago, Ill.
Baker, Henry, Walla Walla, Wash.
Baker, M. C., 194 Milton St., Montreal, Can.
Barradell, A., Pawling, N. Y.
Barth, W. C., Armour Station, Kansas City, Kan.
Bath, W. H., 150 Lafayette Ave., New Brighton, N. Y.
Beckett, E. C., 549 Albany St., Boston, Mass.
Beckwith, J. W., Shullsburg, Wis.
Beechy, L. P., South Omaha, Neb.
Behnke, A. E., 139 Muskegon Ave., Milwaukee, Wis.
Belaire, G. H., Pembroke, Ont.
Bell, Geo. W., Kingston, Ont.
Bell, Roscoe R., 7th Ave. and Union St., Brooklyn, N. Y.
Bennett, S. E., 147 Milk St., Boston, Mass.
Berns, George H., 74 Adams St., Brooklyn, N. Y.
Bieber, U. S. G., Kutztown, Pa.
Bird, W. N. D., 25 Live Stock Exchange, Buffalo, N. Y.
Bitting, A. W., Lafayette, Ind.
Black, J., Richmond, Mich.
Bland, Thos., Waterbury, Conn.
Blattenburg, J. H., Lima, Ohio.
Blount, S. L., Stockyards Station, Fort Worth, Texas.
Bostrom, A., Minden, Neb.
Borden, C. R., 7 Adams St., Taunton, Mass.
Boucher, W. W., 88½ Lyon St., Ottawa, Can.
Boyd, H. W., Nyack, N. Y.

Brainerd, E., Memphis, Mo.
Bray, Thomas A., El Paso, Texas.
Brenton, S., 121 Alexandrine Ave., Detroit, Mich.
Bretherton, W. C., 270 W. 126th St., New York.
Bridge Francis, 228 N. 53d St., Philadelphia, Pa.
Brimhall, S. D., 5 E. 25th St., Minneapolis, Minn.
Brooks, F. E., 207 Market St., Paterson, N. J.
Brooks, S. S., Hamilton Ave. and 16th St., Brooklyn, N. Y.
Brown, F. F., 1404 Holmes St., Kansas City, Mo.
Buckley, John S., 2307 Pennsylvania Ave. N. W., Washington, D. C.
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